LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

PROCEEDINGS

and

ADDRESSES

of

The American Philosophical Association

1931

VOLUME V

of the combined proceedings and addresses
of the several divisions

THE LIBRARY OF THE
JUL 20 1932
UNIVERSITY OF ILLINOIS

Reprinted from THE PHILOSOPHICAL REVIEW, Vol. XLI, No. 3, March, 1932.

106
A74
1931
copy 2

THE LIBRARY OF THE
JUL 20 1932
UNIVERSITY OF ILLINOIS

Reprinted from the PHILOSOPHICAL REVIEW, Vol. XLI, No. 2, March, 1932

ON THE SECOND COPERNICAN REVOLUTION IN PHILOSOPHY *

THE subject to which I am venturing to direct your attention on the present occasion has, in a measure, been forced on me. Last year, you will recall, my predecessor in this office, Professor M. C. Otto, delivered an eloquent plea, evidently born of profound conviction, in behalf of a special view of the nature of the whole philosophical enterprise and of the function of the philosopher at the present juncture of our cultural development—a view which obviously was by him supposed to be quite radical in its modernity.[1] Through the kindly indulgence of my friends in the Western Division of this Association, his mantle has for the moment fallen on me. I am not clear, however, that I can accept his message with his mantle, despite my general sympathy with much of what he explicitly says. And if I am at any point to hesitate, I feel under obligation to him and the cause he represents, while momentarily occupying the honorable post recently vacated by him, to present as definitely as I may the difficulties that seem to lie in the way of my full allegiance to his doctrine, and the ground of these difficulties. By so doing I shall at least give expression to my appreciation of the significance of the issue raised by his impassioned challenge.

But, in so doing, I hope to accomplish more. The issue itself is historically quite important, underlying as it does a tendency

* Address of the President of the Western Division of the American Philosophical Association, delivered before the General Meeting at Berkeley, December 30, 1930.

[1] M. C. Otto: "Meditation on a Hill", PHILOSOPHICAL REVIEW, Vol. XXXIX, pp. 329–350.

which has been more or less current throughout the history of philosophy and which has recently come to a head in what is proclaimed as a genuine Copernican Revolution. My ulterior purpose is, frankly, to inquire whether the revolution as proclaimed can stand, and what precisely is the foundational consideration on which it rests. Such an inquiry, if at all successful, may at least serve to sharpen basal issues; and this would certainly be gain.

Philosophy, I understand Otto to maintain, should be primarily a philosophy of life. If philosophy is to achieve its goal and if philosophers are to accomplish what they should accomplish in relation to our present cultural needs, he seems to say, the philosophical enterprise should be made consciously to converge, with more or less exclusive concern, upon those problems that have a direct connection with the business of living. Traditional philosophy, I understand him to say further, has on the whole and in the main not been a philosophy of life; it has been occupied, rather, with highly technical epistemological questions about the two tables or with arid metaphysical speculations concerning the ultimate nature of the world and the 'reality' behind 'appearances'. And the consideration of such matters, it seems to be implied, if not positively inimical to any sane solution of the problems of life, is at best irrelevant to them and, so, is of little genuine philosophical importance. Thus have the traditional philosophers supposedly failed. They have gone astray after strange gods; they have wandered off into idle, because empty, metaphysical and epistemological speculations, and have left undone the one needful thing they could, and should, have done. What at present is a desideratum, it is asserted, is a re-orientation of the whole philosophical enterprise. Philosophers must learn "to turn from philosophy in the sense of intellectual mastery of ultimate reality and to find it a method for achieving a comprehensive and dependable theory for concrete living". And this re-orientation is apparently held to mark a break with the traditional view in some more or less radical manner. For the tradition is credited with a claim to supreme knowledge on the part of philosophers, the surrender of which is to deprive them of their unique status as knowers and put them on a par with other thinkers, "happy if they may share equally with them in the project

of unraveling the conditions of a progressively satisfying life for the children of men".[2]

I cannot suppose that Otto wishes seriously to contend that the philosophers of the tradition have not in any degree been occupied with "the project of unraveling the conditions of a progressively satisfying life for the children of men". As a matter of historical fact, that project has been of some concern to all of them, and to many of them it has been of primary concern. Wherein, then, does Otto's break with the tradition enter? Apparently it enters at the issue concerning the significance of epistemological and metaphysical inquiries for a philosophy of life. Otto seems to assume that such inquiries have no significance for such a philosophy, whereas the traditional philosophers have on the whole assumed quite the reverse. For Otto "the philosophy which aims at universality of knowledge is of no help to men in the quest for a theory of the good life"; such a philosophy throws "no light on the problem of happy choices as forced upon people in the concrete".[3] In the tradition from Socrates, on the other side, such a philosophy has not infrequently been held to be the *sine qua non* of a theory of the good life.

I do not find that Otto, within the compass of his address, gives us any information with reference to the ground on which he rests his view. There is in his address, however, a suggestion where such information may be found. The address itself is avowedly a call for recruits to the movement in philosophy headed formerly by William James and latterly by John Dewey, and presumably Otto is content that any who wish to know the foundation on which he stands should seek for it in the constructions of these leaders. I shall therefore act on this suggestion and turn at once to the analyses of Dewey, who has recently, as it happens, given us a cumulative criticism of the tradition which brings to the fore the fundamental considerations here specially relevant with a definiteness not, I think, hitherto achieved either by Dewey himself or by any other representative of the new revolution. I refer, of course, to the criticism expressed in his challenging volume of Gifford Lectures. My further discussion of the question will be linked with

[2] *Op. cit.*, p. 349.
[3] *Op. cit.*, p. 343.

this impressive statement of principles. So linked, it certainly will not be occupied with merely external considerations; and I venture to hope that it may direct attention to the crucial point of difference between the new view of philosophy and that of the tradition which it repudiates.

As we enter upon this discussion I desire, in the first place, to delimit its scope. It is not concerned, on the one side, with any attempt to estimate the general significance of the movement in philosophy headed formerly by James and latterly by Dewey. That movement is doubtless very significant and, apart from debatable details, I am quite willing to agree with the spirit of Otto's estimate: "The tendency in which James and Dewey invested their lives belongs to the great creative heritage of mankind" and "will be reckoned with until men stop seeking for meaning in human experience." There is here no issue, or at least no issue which is of moment to the present purpose; and I wish explicitly to eliminate the question from consideration. On the other side, the discussion is also not concerned with any inquiry into the general significance of the very complex movement vaguely called 'the tradition'; and I am particularly anxious to have this understood from the beginning. In that movement there is certainly much which seems to me of lasting value, and which contemporary philosophy has neglected to its own hurt; there is also much which should, I think, be relegated to the lumber-room of speculative curiosities—useful in its historical setting, no doubt, but now outworn. But what is there valuable and what valueless is not now in question, except with reference to the revolutionist's special point of attack. On that point indeed the tradition seems to me to stand firm, as I shall try to show in the sequel; but apart from that point I neither praise the tradition nor condemn it. And, finally, the present discussion does not undertake to formulate in set terms a specific answer to the question whether those problems arising at once out of the business of living should alone be deemed significant problems for philosophy. In the end, to be sure, I expect to ask you to return with me upon this question, but only to give final point to considerations which meanwhile will be developed in connection with the central issue towards which the discussion is primarily directed. And that issue may be briefly and roughly indicated

thus: What is the basal point of difference on which turns the peculiar view of the nature of philosophy advocated against the traditionist by the revolutionist, and what is to be said with reference to it? Such is the main theme of the following discussion, and without further preliminary remarks I turn at once to its elaboration.

That this difference centres in a theory of knowledge may presumably be taken for granted. So much at least, if not much else, has been clear from the beginning of the controversy. Hardly had William James presented his formulation of what he called a "new name for some old ways of thinking" before the traditionist sensed that some of his most cherished epistemological doctrines were involved. Hereupon a heated controversy began, as is well known, and for several years it was waged with great acumen on both sides. Despite the critical ability invested in it, however, it died down at last without apparent result, largely because the disputants seemed unable explicitly to agree on what precisely the fight was about. But it was clearly seen on all sides that the *casus belli* lay in the general field of epistemology.

Later developments within the revolutionary movement itself, however, have done much to focalize the issue. These developments have throughout been led by Dewey; and in his recent attack on the tradition he lays the foundation for a fixation of the locus of the conflict with a precision heretofore hardly possible. This accomplishment of the Gifford Lectures lies in their emphatic statement of the thesis wherein, from the standpoint of the revolutionist, the traditional epistemology has basically erred, and the light which is thereby thrown upon the corresponding basal doctrine of the epistemology that is supposed to supplant it. Viewed from the angle of one who is inclined to be sympathetic and yet is still sufficiently bound by the tradition to remain querulous, this accomplishment renders *The Quest for Certainty* one of the most significantly constructive documents of the revolutionary literature. The accomplishment has long been a desideratum, and it marks a definite step in advance so far as the logic of the controversy is concerned.

Traditional philosophy, we are here informed, is grounded in the "spectator theory" of knowledge, the main thesis of which is

"that knowledge is concerned with disclosure of the characteristics of antecedent existences and essences" and that the tests of the validity of thought are found in "what is fixed prior to it and independently of it".[4] This theory of knowledge, we are further informed, is false and is definitively shown to be false by an analysis of knowing in the concrete, as exemplified particularly in the experimental method of the physical sciences. Such an analysis discloses that the traditional separation between knowing and doing has by science been completely abandoned, and that "the experimental procedure is one that installs doing as the heart of knowing". The conclusion is therefore inescapable that traditional philosophy, as an intellectual enterprise, has all along been misoriented and directed upon the pursuit of an essentially illusory goal; it has been in search of antecedent being and has tried to find the test of its validity in such antecedent being, but this conception of philosophy's function cannot stand in the light of "reflection upon actual conditions of science and life". The traditional view of philosophy must therefore be repudiated, along with the erroneous epistemology underlying it. In its place must be set up the view of philosophy as a search for security of values, which view follows directly from the only epistemological theory now tenable—the theory, namely, that thought is "a mode of directed overt action", that ideas are "anticipatory plans and designs which take effect in concrete *re*constructions of antecedent conditions of existence", and that "standards and tests of validity are found in the consequences of overt activity".[5]

This bare summary of an argument which in its details is familiar to all is here set down solely for the purpose of emphasizing what, as viewed by the revolutionist, is the radical error of the old epistemology. This, clearly, lies in the assumption attributed to the entire tradition that ideas or objects of knowledge are revelatory of the nature of antecedent being, and that herein is found their chief function as well as the criterion of their validity.[6] The

[4] *The Quest for Certainty*, pp. 36, 71, 73, etc.

[5] *The Quest for Certainty*, pp. 73, 166–167.

[6] There are in fact two basal theses attributed to the tradition: (i) the one mentioned above in the text, namely, "that knowledge is concerned with disclosure of the characteristics of antecedent existences and essences"; and (ii) "that the properties of value found therein provide the authoritative standards

question immediately before us is whether, and in what sense, the attribution of this assumption to the tradition is warranted. The further question, whether the tradition is to be repudiated because of the assumption if correctly attributed to it, falls to be considered below after the corresponding doctrine of the new epistemology has been surveyed.

The question whether the so-called "spectator theory" of knowledge may justly be attributed to the tradition cannot be answered by a simple yes or no. It all depends on what is understood by the tradition, and what by the theory. And on each of these points clarity is essential.

By the "tradition" is apparently intended, not only the classical philosophy as exemplified in the major systems from Plato to Hegel, but also the more recent philosophy up to the eve of the latest revolution. Traditional philosophers are the pre-revolutionary philosophers, even including those of sceptical bent. This comprehensive sweep of "the tradition" must be borne in mind as we turn to the other question concerning the meaning of the spectator-theory of knowledge.

Clearly, if this theory is justly to be attributed to the tradition in this comprehensive sense, then it must be defined in such a way as to be acceptable to all of the outstanding representatives—to the Sophists and Plato and Aristotle, to empiricists and rationalists, to Kant and Hegel, to sceptics like Hume and dogmatists like Reid, to modern idealists and realists. For it would be historically quite unfair to place beneath any important representatives of the tradition, through the guise of an ambiguous label, a theory intended in a sense they would not be willing to accept. In what sense then, we must ask, has the spectator-theory of knowledge been accepted, implicitly or explicitly, by all of the traditionists? The answer, of course, involves many complicated puzzles of interpretation; and, if adequately formulated, it would be equivalent to a tolerably complete survey of the entire history of philosophical speculation. Nevertheless, it is possible to state succinctly and with

for the conduct of life" (*The Quest for Certainty*, pp. 36, 71, and elsewhere). The first of these is clearly logically prior, since if it is rejected the second certainly cannot stand—it would not even have sense; consideration of the second is, therefore, omitted. Its omission involves the omission of only subsidiary, though indeed quite important, principles.

a definiteness adequate for the present context the meaning in which the spectator-theory of knowledge has underlain the tradition from the beginning. That meaning may, with fair accuracy, I think, be resolved into the following three propositions: (i) that the object of knowledge, or idea, in respect of what Dewey elsewhere calls its "referential meaning",[7] is linked by implication with what he here calls "antecedent existences and essences"; (ii) that these antecedent existences and essences are entities which, in some sense, are independent of, not relative to or entirely compassed by, human experience; and (iii) that the validity of the meaning of objects of knowledge, or ideas, is in the end to be tested in terms of their reference to such antecedent existences or essences. If this is what is understood by the spectator-theory of knowledge, then it may be said to be foundational within the procedure of the tradition; in this sense, but as I think in this sense alone, it is either an explicit conviction or an underlying assumption of practically all philosophers from Plato down to the latest revolution.

This preliminary delimitation of the meaning of the spectator-theory of knowledge is essential, in view of the treacherous ambiguity which lies hidden in the assertion that all of the pre-revolutionary philosophers assumed that ideas are 'revelatory' of antecedent being, or that, in their opinion, the chief function of the philosopher is to 'discover' the nature of such being. Such a statement may suggest to some minds that what is intended is the assertion that the pre-revolutionary philosophers supposed knowledge capable of disclosing the nature of being in some pictographic fashion, as the eye discloses the landscape, and that they made such mental photography the goal of philosophizing. I do not for a moment assume that Dewey himself intends this, though he is not always as clear on the point as could be desired. But the above ambiguity threatens, and the conclusion to the effect indicated is not far off; so the warning is not amiss. If we are to attribute to the traditionist this spectator-theory of knowledge, it is essential that we be clear what we attribute to him. The theory is attributable to him only in the sense in which he accepted it. And he accepted it only as the thesis that objects of knowledge are

[7] This meaning is exemplified in "an event that has the meaning of indicating, signifying, being the sign or evidence of something else" (JOURNAL OF PHILOSOPHY, Vol. XXV, p. 351).

'revelatory' of antecedent being, and 'disclose' its nature in the sense that their 'referential' meaning points to it in such a manner that both the meaning and its validity are implicatively involved in the antecedent being which in the case is relevant. As thus understood, the theory not only may, but must, be held to be basal within the classic tradition; so far as my acquaintance with that tradition extends, the theory is not basal when understood in any other sense.

It is agreed, then, that the spectator-theory as above defined is foundational in the tradition. It is clear, also, that the revolutionist holds this theory to be radically false in its claim concerning the relation between the object of knowledge and antecedent being, and for this reason he repudiates both the theory and the tradition founded on it. And with this, the locus of his quarrel with the traditionist is precisely fixed and his negative position definitely formulated. What, we are now to inquire, is his own constructive statement on the point?

In this statement, the basal notions most directly relevant to the point in debate are: "objects of knowledge" and "things had in experience". And the full significance of the statement turns around the meaning of these notions and their relation, on the one side, to each other and, on the other side, to what in the tradition are called "antecedent existences and essences".

With reference to the first notion there is, I think, no particular difficulty. An object of knowledge is the product of that type of activity known as reflection, and both its meaning and its validity are dependent upon the operation which produces it. "A definition of the nature of ideas in terms of operations to be performed and the test of the validity of the ideas by the *consequences* of these operations"—this, we are informed, is the accomplishment of the "empirical theory of ideas", which accomplishment for the first time gives genuine freedom to reflection and "is one of three or four outstanding feats of intellectual history".[8] In the new epistemology, then, the object of knowledge, or the idea, is the eventual product of the reflective process; and within the scope of that operation are to be found both its meaning and the test of that meaning's validity.

[8] In *The Quest for Certainty*, p. 114; the italics are in the text.

The notion of "things had in experience" is, unfortunately, not so clear, and consequently is not amenable to a simple description. It includes two elements, namely, the content which is 'had' and the state of 'being had'. These are, of course, mutually involved, but a separate consideration of them may aid clarity.

My impression is that we are given at least two accounts of what is intended by 'being had', when it is said that things or events are had in experience; and these seem to me quite distinct and even contradictory. At times, it appears to be affirmed that 'being had' in experience is logically identical with being the result of a completed inference. This view is often an implicit assumption, but on occasion it is explicitly maintained. For instance, we are told that a sgnifying event, as a sound, is as such not self-contained, otherwise "it would not signify; the very meaning of being a signifying event is that it stands in the *relation* of indicating." But "when the inference is completed, there is a 'whole', a situation in which the distinction between signifying and signified no longer holds; for the completion of the inference is found in a situation which is directly 'had'—the situation 'we go to' and then from."[9] From this it seems natural to conclude that 'being had' is intended to be identical with being a completed inferential product—or, as Dewey expresses it more technically, being an "immanent meaning". Elsewhere, however, and I am inclined to think generally, we are led to believe that what is intended is to identify 'being had' with a state of immediate and non-cognitive experience which in no sense involves inference. In this other context the state of 'being had' is described either as the result of the 'natural' interaction between organism and environment, or as a simple state of being 'enjoyed'; but in either case inference seems to be entirely excluded and the state to be quite free from meaning.[10] Thus, so far as I am able to determine, the state of 'being had' is left quite ambiguous in the new epistemology. And I venture to suggest, in passing, that an understanding of that epistemology would be

[9] Dewey, "Meaning and Existence", Journal of Philosophy, Vol. XXV, p. 352; the italics are in the text. Compare pp. 349, 351. *Cf. The Quest for Certainty*, pp. 99, 137.

[10] *Cf. The Quest for Certainty*, pp. 172–173, 178; and the article, "In Reply to Some Criticisms", Journal of Philosophy, Vol. XXVII, especially p. 273.

considerably facilitated if an explicit and precise pronouncement on the ambiguity were authoritatively made.

Until such a pronouncement is made, however, no definite statement concerning the nature of that which is had seems possible. It may be one of two notions, which are logically quite different. On the one hand, 'the had' may be conceived as the product of an inferential process, and, so, as a peculiar sort of object of knowledge, namely, an object of knowledge with an immanent meaning; on the other hand, it may be conceived as that which is in experience wholly *de novo* so far as inference is concerned and consequently not in any sense an object of knowledge and in itself entirely without meaning. Which it is to be taken as is, of course, a matter of profound epistemological significance. But I do not find a definite position on the point affirmed by the new epistemology, despite the very heavy rôle assigned in that epistemology to "things or events had in experience". What I do find, or certainly seem to find, is an acceptance of two contradictory views in varying contexts; nor is it quite clear which of the two receives the main emphasis.

This ambiguity with reference to the nature of "things had in experience" leads to confusion concerning the relation between such "things" and objects of knowledge. What is *said* about that relation is, indeed, quite specific. It is that the object of knowledge is "a deliberately effected re-arrangement or re-disposition, by means of overt operations" of the antecedent 'hads', and that the latter constitute both the *termini a quibus* and the *termini ad quos* of those operations. The full significance of this assertion, however, does not appear on its surface; and when one tries to read it in the light of its general context, one is immediately faced by certain difficulties arising from the ambiguity in the nature of "things had in experience" noted above.

Since these difficulties are not directly germane to the main purpose of the present exposition, they may here be set aside without detailed statement. I shall pause only long enough to note that they centre around the question, How, if the meaning-character of the object of knowledge is as defined in the new doctrine of ideas, things or events had in experience can function in the reflective process either as *termini a quibus* or as *termini ad quos?* A survey

of this question would soon run into matters that have often been discussed, and I have no intention here to turn once more the ashes of these old controversies. But I cannot resist the temptation to urge again the consideration that the question cannot be finally answered by the simple expedient of calling the 'hads' problematic, or of insisting that they are 'takens' as well as 'hads'. For in the end the question is in fact this: How can the 'hads', as defined, be problematic, or be taken? It is clear that the first step in answer brings one face to face with the issue as to what precisely is to be understood by that which is had. And I venture to suggest that a rigorous analysis of the conception of the 'hads' and their relation to 'objects of knowledge' would do much to illumine this part of the new epistemology, which to my mind at least still remains dark.

The question of primary importance to the present purpose, however, concerns the disposition which the revolutionist makes of the traditionist's "antecedent existences and essences". If the polemic against the spectator-theory of knowledge is to be taken seriously, there is only one answer to this question: the antecedent being of the tradition is simply set aside as an epistemological illusion. For, according to that polemic, the chief fatuity of the older theory lies in its persistent but essentially vain effort to include such being within the process of reflection and to give it a significant function there; and the essential vanity of that effort springs from the fact, revealed by a study of experimental science in respect of both its method and its results, that ideas are as they are—namely, not "innate properties of mind corresponding to ultimate prior traits of Being", but either directing factors in reflective activity (ideas as hypotheses) or the consequences of such directed activity (ideas as "objects that have the property of being known").[11] Thus it would appear that the traditionist's "antecedent existences and essences" are once for all set aside.

Despite this apparently inescapable conclusion of the polemic as well as of the construction that supports it, there remains the fact—to the expositor, a disconcerting fact—that numerous passages may readily be quoted from recent revolutionary literature in which something whose logical function is strikingly like the traditionist's

[11] *The Quest for Certainty*, pp. 86–87, 166–167.

being is introduced into the reflective situation under another name. And I fear that these passages are not infrequently so intended. We read, for instance, that "events acquire meaning by having their potential consequences identified with them as their properties" and that "when it is a question of *critical* search for *valid* meaning, namely, for that meaning we are *entitled* to treat as the genuine meaning of the events in question, we are obliged to have recourse to antecedent conditions."[12] This passage is typical of many others to the same effect. And when reading them one wonders whether the discarded being of the tradition is not brought back into the reflective occasion under such terms as "potential consequences", "events" and "antecedent conditions", and whether the passages do not owe their significance precisely to this fact.

Closer inspection, however, reveals ambiguities in such terms as "events" and "conditions". As conceived by the revolutionist, they must be merely "things or events had in experience", and they are handicapped by the equivocation of that much-worked phrase. Such statements may consequently be given two diverse readings. On one reading, they certainly seem to say that both meaning and validity of meaning are attached to something that is antecedent to the reflective occasion and differs only verbally from what in the tradition are "antecedent existences and essences"—in other words, they seem to say that the traditional antecedent being must be taken as an object of knowledge. And when they are given this reading, one who ventures to insist that the new epistemology repudiates this view, and should in consistency abide by the consequences of the repudiation, is all too easily pilloried for doing violence to the plain text of chapter and verse. But such passages may also be read to quite another effect. They may be read as intending simply to say that meaning and validity are tied to the 'hads' of experience—these 'hads' being explicitly differentiated from the traditional antecedent being, and taken as entirely *ad hoc* with none of the independence of such being. I have indeed ventured to suggest that certain difficulties seem to stand in the way of logically connecting these 'hads', thus under-

[12] Dewey, JOURNAL OF PHILOSOPHY, Vol. XXV, p. 348; the italics are all in the text. See the same JOURNAL, Vol. XXVII, p. 179.

stood, with the objects of knowledge or ideas as conceived by the revolutionist. Granting, however, that these difficulties are only figments arising from misunderstanding and that the logical relation between ideas and these antecedent 'hads' is quite plain on the principles of the revolutionary epistemology, it still remains possible to interpret the 'hads' as fundamentally distinct from the traditional existences and essences. This reading of such passages, I now wish to insist and to emphasize, must be taken in all seriousness as the only correct reading; or the polemic against the tradition loses its whole point. If this reading is permitted to stand, such statements are in principle harmonious with the criticism of the older epistemology; but, so far at least as I am able to see, they are not harmonious on any other reading.

Presumably we are safe in assuming that the general claim of the new epistemology on this crucial issue is foundational, and that subordinate ambiguous passages must be read so as to make them consistent with their systematic context. If so, then the positive thesis of this epistemology is that objects of knowledge, in respect of both their meaning and the validity of this meaning, are attached only to the "consequences" of the reflective process; and that among these consequences "things had in experience" are somehow to be included—though just how is not clear—but only in the sense in which such things are quite other than the antecedent existences and essences of the tradition. As thus understood, the new epistemology is not merely a new name for an old way of thinking, but is truly what it claims to be—namely, an essentially new view of the nature and significance of thought, a genuine Copernican revolution in epistemological theory. It is not such a revolution unless its basal thesis is thus understood.

Despite its length, the preceding expository statement could hardly be shortened and at the same time buttressed against the accusation of being arbitrary. Doubtless it is even now too short to do justice to the complexities involved. But, in intent at least, it has tried to touch the fundamentals and to guard against misinterpreting or overlooking alternatives. If in this it has failed, it may perchance still be useful as indicative of important points on which further analysis by the revolutionists might be helpful.

If it has not failed, we are at last in position to state the crucial issue between the new epistemology and the old with a precision which may help us forward towards more constructive considerations. According to the old epistemology, the object of knowledge is 'revelatory' of antecedent being in the sense (if repetition for the sake of clarity is permissible) that the referential meaning of the object of knowledge is, or may be, joined by way of implication [13] with an objective situation which is antecedent to, and wholly independent of, not only the immediate reflective occasion, but also human experience itself. According to the new epistemology, on the other hand, there is no implicative linkage between the object of knowledge and this sort of antecedent being, but the referential meaning of the object of knowledge is implicatively attached only to the consequences of the overt operation of reflection in which it psychologically functions—it being understood that "things or events had in experience" are somehow to be included among these consequences, but only as things or events taken entirely *ad hoc* and having none of the independence belonging to the traditional existences and essences. Thus is the issue between the old and the new quite definitely joined.

Further consideration of this issue on the present occasion must necessarily be brief, and I fear I can hardly do more than affirm impressions. Presumably it is needless to request that the apparently dogmatic tone of these concluding comments be attributed solely to my desire to spare you the pain and me the embarrassment of an unduly protracted discussion. And I shall endeavor further to conserve time by keeping to matters that are foundational within the main issue before us.

The issue at once resolves itself, of course, into the old problem of meaning. What the controversy obviously calls for is a rigorous analysis of this notion. Such an analysis cannot here be carried through with any thoroughness, but something may be done in a preliminary way. Fixing attention upon the meaning-situation —the situation, that is, in which objects of knowledge empirically function—I wish briefly to inquire concerning some of the chief

[13] This notion is, of course, puzzling. But presumably it is sufficiently definite for the purposes of its context here and elsewhere where used in this paper, apart from any attempt to define it or to consider whether it is definable.

features of that which in the object of knowledge is called its meaning, and then to suggest an application of the results to a resolution of the conflict between the revolutionist and the traditionist.

Beginning with the analysis, we must hold in the first place that what is called the referential meaning of the object of knowledge is always dual. On the one side it is prospective, referring to the purpose and the consequences of the reflective process itself; on the other side, it is, so to say, retrospective, referring back to something antecedent to the purpose and the consequences of the reflective process. The question of special importance here concerns the nature of this 'something' which is thus antecedent to the occasion; and the answer to the question, I should wish to hold, is that it is an immediate psychological content which somehow (how is not now before us) reaches logically beyond itself to a context which is entirely independent of the reflective occasion. In other words, the retrospective side of the idea's meaning refers back directly to "things or events had in experience" and indirectly, through them, to independent essences or existences; and in the latter reference the meaning must be said to be trans-empirical.

To carry the analysis here a step further, it would appear that the prospective meaning of an object of knowledge may be said to be relative to the universe of discourse which generates it and makes use of it. The retrospective meaning, however, is only partly relative to this universe; it is relative to the empirical 'hads' which belong to the universe of discourse, but through the trans-empirical reach of these 'hads' it is saved from being entirely relative because it is thereby attached to another universe, namely, that of essences and existences, which gives to it something of the nature of an absolute signification. The atom as an object of knowledge, for example, means something for Democritus and it also means something for Dalton; what it means for the one is quite different from what it means for the other, and its meaning for either is determinable only with reference to his special point of view. But, on the other side, the meaning of the atom of Democritus is also the meaning of the atom of Dalton in some quite important and fairly definite sense—in the sense, namely, that the same general existential situation (proximately as "things or

events had in experience", but remotely as independent existences) is relevant to the two objects of knowledge and furnishes a ground which is common to them. Taken in its first setting, the meaning of the atom is what Democritus or Dalton intends it to mean, and it is not the same in the two instances; taken in its second setting, however, it is ideally the same for both, and this fact it is which makes possible an intelligible view of scientific progress.

Our first thesis, then, is that every object of knowledge has in its meaning a dual nature. On the one side, it refers to reflective purposes and consequences; on the other side, it refers directly to the empirical 'hads' (or, if you prefer, the 'takens') and through them to an independent existential or subsistential order.

A further thesis which I should think must be accepted is that these two aspects of meaning are logically inseparable. What does a given object of knowledge mean? It means, on the one side, what the one who entertains it intends it to mean; but, on the other side, what one intends it to mean is in the end logically connected with the trans-empirical aspects of the empirical 'hads'. What the atom means for Democritus, to recur to our former example, is what Democritus intends by the atom, is what the atom *does* for him in the context in which he makes use of it. But what he intends by the atom is, in its turn, logically dependent on what he takes as data, and these, while in an important sense relative to the special occasion, are in an equally important sense independent of it and reach beyond the limits of the empirical situation. Thus the two references of the object of knowledge are inseparably joined; strictly considered, they are logical correlatives, and the full meaning of the object of knowledge involves both. This, I should hold, is true generally. Analyse the meaning of any object of knowledge in its concrete setting (such is the contention), and you will be driven to acknowledge that the prospective and retrospective references are mutually dependent for their signification. Sunder them in theory and treat them as if they were irrelevant to each other, and you will find that the meaning-situation withers under such abstract handling. The two stand together, or meaning is viciously truncated. Of course, one may on occasion place emphasis on one or the other; but if either emphasis be taken as exclusive, it thereby becomes empirically ruinous.

Despite their inseparability, however, these two aspects of referential meaning do not lie on quite the same logical level. It is the retrospective aspect which is the final court of appeal, not the prospective; and in the end authority rests in the farther reaches of the retrospective reference—in what I have above called the transempirical aspect of the empirical 'hads'. And this point needs careful attention in view of the fact that it has been so frequently neglected or misread in recent theories of meaning, idealistic as well as pragmatic.

In it there are indeed many complications which cannot even be so much as mentioned here. But the main principle involved may at least be stated and the broad outline of the argument in support of it indicated. The principle is this: the universality and corrigibility of objects of knowledge run ultimately to ground in the retrospective reference of their meaning. The justification of the principle is to be sought and found in a thorough-going attempt to attain a satisfactory definition of the notions of 'objects' and 'logical necessity'. There is here no time for such an undertaking, of course, and I must perforce content myself with a bare assertion of the conviction that such is the case. I can, however, call attention to the fact that much at least of the preliminary analysis has long since been done by others—in respect of 'necessity', by the participants in the old debate about the significance and validity of "clear and distinct ideas", particularly by Spinoza and Leibniz; and in respect of 'object', negatively by Hume and Berkeley and positively by Kant and Hegel.

The immediately preceding observations are, of course, not proved; but they are at least indicative of theses which are important for the debate and which must be attended to if the debate is to be carried forward. And in my opinion they may be proved by a detailed analytical study of meaning-situations.

Assuming that they are empirically grounded, what is their bearing on the controversy between the revolutionist and the traditionist? If they are well grounded, then each side of the controversy partly stands and partly falls. The traditionist is in principle right in his insistence upon the revelatory function of objects of knowledge; he is in error, however, in so far as he fails (if and where he does fail) to take into account the influence of prospective

meanings on such a revelatory function. The revolutionist, on his side, is partly on solid ground, but only partly so, and in what seems to be his chief contention he is in error. I wish briefly to draw out each of these points.

We have already urged that the attribution of the spectator-theory of knowledge to that complex movement known as 'the tradition' may be allowed only with qualification. I recall the point here primarily to note its bearing upon our estimate of the significance of the traditional epistemology.[14] The sense in which the spectator-theory of knowledge underlies the tradition is precisely the sense in which ideas have meaning, if the analysis of meaning suggested above is in principle permitted to stand. For what that theory in this sense says is simply that ideas are by their meaning attached to things-in-themselves; and this cannot be denied, if the analysis outlined is affirmed. So far, then, the traditionist is solid against the attack of the revolutionist; to deny his thesis is to deny that ideas have this sort of meaning, and this on our showing above is to deny that they have what empirically is characteristic of them.

A good deal can perhaps be said in support of the position that some representatives of the tradition have held the spectator-theory in the special sense in which that theory means that independent being is present to ideas, so to say, *in propria persona*. The theory in this sense cannot, I repeat, be attributed to all representatives of the tradition; but it may perhaps be fairly attributed to some. If so, then such representatives of the tradition must be said to be in error on a basal epistemological doctrine. In empirical meaning-situations, at any rate, independent being is present partly in an interrogative form, incomplete and with ragged edges; it is not there in a finished or complete form, unless it may be said to be so in those situations which are hypothetical at bottom and characterized by what one might call a certain sort of hypothetical abso-

[14] It should be noted that the qualification is also quite important with reference to the significance of the revolutionary epistemology. For the revolutionary epistemology denies the older epistemology in principle; and this denial, if the older theory is accepted as qualified, logically commits the revolutionist at once and irrevocably to a denial of any implicative relationship between ideas and things-in-themselves. If the qualifiation is not accepted, then the spectator-theory cannot justly be attributed to the tradition at all.

luteness. Even in such cases, however, the absoluteness is by no means ultimate; they share the ragged-edgedness of the more categorical situations, and include independent being in part at least as a question-mark. And this is apparently inevitable, since independent being is present as a datum, and every datum, as Dewey rightly insists, is also a 'taken'. The referential meaning of the idea reaches independent being only through the medium of "things or events had in experience"; and the being is modified by the medium through which it enters functionally into the cognitive situation. It is there as in some degree problematic, and not as a self-contained entity.

On this point the position of the revolutionist is fundamentally sound. The psychological and biographical context in which objects of knowledge are generated and function is unquestionably partly determinative in respect of the meaning and validity of such objects. And a frank acceptance of this fact, together with a recognition of its significant implications, would prevent our deluding ourselves—as some of the traditionists apparently deluded themselves—with a false hope about 'absolutes', whether written with an initial capital or not.

But there is the other side to the situation which must not be overlooked, and this is the side which the traditionist in his basal thesis rightly emphasizes. The meaning of the object of knowledge is also retrospective and linked with an order which cannot without falsification be identified with any mere psychological or biographical context of the meaning-situation. In so far as the revolutionist denies this reference—and such a denial I understand to be his main polemic against the tradition [15]—he is open to effective attack; for in such denial is involved the negation of a characteristic which not only belongs to all meaning-situations, but is even foundational to them. Though not present in hypostatic union, independent being is certainly functionally involved in such situations.

[15] If the revolutionist does not intend this denial, then, I repeat, it is impossible to make sense either of his reiterated assertion that both the nature and the validity of meaning must be defined exclusively in terms of its prospective reference, or of his persistent claim that his epistemological doctrine for the first time frees philosophy from the *ignis fatuus* which during these centuries has kept the pre-revolutionary philosophers wandering in the wilderness.

Suppose we take in good faith the thesis that doing must be "installed as the heart of knowing", that every idea is merely a plan of action. What then? Surely the significance of any reconstruction of a situation involves reference to antecedent essences and existences? Taken as means, and even as mere expedients for the given occasion, ideas owe their practical value to the fidelity with which they 'disclose' the relevant aspects of the existential order in its trans-empirical character; while the significance, both theoretical and practical, of ideas taken as ends impinges in a very definite manner on their ontological status. The revolutionist himself admits explicitly, though as I think inconsistently with his view of meaning, that, when taken as plans of action, ideas are referentially linked with the 'hads' of experience and owe their utility precisely to this linkage; this admission is always involved in the notions of 'purpose' and 'consequences' as made use of by him in his more descriptive accounts of reflective experience, and it is an admission which he must avow or else run counter to the plain facts of that experience. What is needed to complete his account, I urge, is, in the first place, a re-orientation of his view of meaning so as to include an explicit acknowledgment of this linkage of the objects of knowledge with the empirical 'hads', and, in the second place, a frank recognition of the trans-empirical reach of this reference—its reach, that is, through and by means of the 'hads' to the underlying order of antecedent being which is quite independent of the reflective occasion. And he will be forced to such a double qualification of his theory, I maintain, by an analytical study of meaning-situations.

Along these lines, then, I should wish to safeguard the epistemology of the traditionist and revise that of the revolutionist. I should try to persuade the revolutionist, while maintaining in principle his thesis that data are functional, to grapple more sternly with the retrospective aspect of the meaning of objects of knowledge, their linkage with things or events had in experience, and particularly to follow this reference to its logical termination in what I cannot but think is essentially the traditionist's antecedent being. And I should warn the traditionist against permitting his doctrine of the revelatory nature of ideas to blind him to the implications of the fact that the medium of linkage between ideas and

existences or essences is always empirical, and that the human view of things-in-themselves is, as Kant urges in principle, always from the hither side.

The novelty of this position, if indeed there be any novelty in it, lies in its patent affirmations and negations, and its consequent explicit synthesis of *prima facie* radical oppositions. Whether novel or not, the position is quite important. It at least brings assumptions into the open; and, unless I am mistaken in my estimate, it puts us in position to go forward to the fruitful consideration of other issues which lie before. But these issues fall beyond the scope of this discussion, which has already transgressed the limits of my hour. I may not bring it to a close, however, without returning for a moment upon my predecessor's view of the nature and function of philosophy with which we began.

What, I felt impelled in the beginning to ask, is my loyalty in respect of this view? The intervening discussion has, in intent at least, disclosed the principles which are basic to the answer that must be given. And in the light of these principles, the answer seems clear. Assuming that one is sympathetic with the spirit of the contention that philosophy proper is blankly identical with a philosophy of life, one still seems compelled to hold that the philosopher cannot in the end escape ontological issues. Nor are such issues relatively unimportant; on the contrary, they must be met, implicitly or explicitly, at each step in the formulation and organization of values. There is, to be sure, a confusion here which tends to darken the question. A philosophy of life may mean a special way of living, or it may mean a theory about living; and one who is a good philosopher in one sense of the term is not necessarily so in the other. Which of these two meanings is intended by those who advocate an identification of philosophy with the philosophy of life is, unfortunately, not always clear. I am assuming, however, that what is intended by the view here under discussion is that philosophy should be identified with an intellectual discipline whose main concern is with the problems arising out of the content and the art of the business of living. And I urge that the philosopher in this sense must necessarily be a metaphysician to the extent at least of being forced to make some systematic disposition of the quite fundamental issues arising from the entanglement be-

tween the search for security and the quest for certainty. And what disposition he is to make of these issues should certainly be outspoken; it constitutes no insignificant part of his general philosophy of life.

If the principles I have urged are to stand, the philosophical search for security is *eo ipso* a quest for certainty—a quest, that is, which seeks its goal beyond any biographical experience, and which within this reference is characterized by both a need of and a ground for its constant self-correction. If this mutual involvement of the search and the quest be accepted, then I should have no objection in principle to the identification of philosophy with a philosophy of life; but I fail to see here any radical break with the tradition. If the involvement be denied, then I see no reason for holding that philosophy can be identified with a philosophy of life, unless the term 'philosophy' is arbitrarily narrowed in its scope and the justification of the denial is handed over to a logically prior discipline designated by some other name. But if the involvement is denied, we should frankly face the alternatives that remain for the philosopher in this limited capacity. And they would appear to be: either to proclaim the doctrine of opportunism and muddling through; or to dogmatize in the name of his pet absolute, whether in the form of an *a priori* imperative to be reasonable or the equally empty empirical exhortation to be up and doing; or, finally, to avow the utter vanity of life and, in the grand manner, perhaps to seek a compensatory thrill in the counsel of heroic despair.

G. Watts Cunningham

Cornell University

OBJECTS AND SUBJECTS *

... Τὸ παρὸν ἑκάστῳ πάθος, ἐξ ὧν αἱ αἰσθήσεις καὶ αἱ κατὰ ταύτας δόξαι γίγνονται, ... *Theaetetus*, 179 C.

§1. *Prefatory.*—When Descartes, Locke, and Hume undertake the analysis of experience, they utilize those elements in their own experience which lie clear and distinct, fit for the exactitude of intellectual discourse. It is tacitly assumed, except by Plato, that the more fundamental factors will ever lend themselves for discrimination with peculiar clarity. This assumption is here directly challenged.

§2. *Structure of Experience.*—No topic has suffered more from this tendency of philosophers than their account of the object-subject structure of experience. In the first place, this structure has been identified with the bare relation of knower to known. The subject is the knower, the object is the known. Thus, with this interpretation, the object-subject relation is the known-knower relation. It then follows that the more clearly any instance of this relation stands out for discrimination, the more safely we can utilize it for the interpretation of the status of experience in the universe of things. Hence Descartes' appeal to clarity and distinctness.

This deduction presupposes that the subject-object relation is the fundamental structural pattern of experience. I agree with this presupposition, but not in the sense in which subject-object is identified with knower-known. I contend that the notion of mere knowledge is a high abstraction, and that conscious discrimination itself is a variable factor only present in the more elaborate examples of occasions of experience. The basis of experience is emotional. Stated more generally, the basic fact is the rise of an affective tone originating from things whose relevance is given.

§3. *Phraseology.*—Thus the Quaker word 'concern', divested of any suggestion of knowledge, is more fitted to express this

* The presidential address to the eastern division of the American Philosophical Association, at New Haven, December 29, 1931.

fundamental structure. The occasion as subject has a 'concern' for the object. And the 'concern' at once places the object as a component in the experience of the subject, with an affective tone drawn from this object and directed towards it. With this interpretation the subject-object relation is the fundamental structure of experience.

Quaker usages of language are not widely spread. Also each phraseology leads to a crop of misunderstandings. The subject-object relation can be conceived as Recipient and Provoker, where the fact provoked is an affective tone about the status of the provoker in the provoked experience. Also the total provoked occasion is a totality involving many such examples of provocation. Again this phraseology is unfortunate; for the word 'recipient' suggests a passivity which is erroneous.

§4. *Prehensions.*—A more formal explanation is as follows. An occasion of experience is an activity, analysable into modes of functioning which jointly constitute its process of becoming. Each mode is analysable into the total experience as active subject, and into the thing or object with which the special activity is concerned. This thing is a datum, that is to say, is describable without reference to its entertainment in that occasion. An object is anything performing this function of a datum provoking some special activity of the occasion in question. Thus subject and object are relative terms. An occasion is a subject in respect to its special activity concerning an object; and anything is an object in respect to its provocation of some special activity within a subject. Such a mode of activity is termed a 'prehension'. Thus a prehension involves three factors. There is the occasion of experience within which the prehension is a detail of activity; there is the datum whose relevance provokes the origination of this prehension; this datum is the prehended object; there is the subjective form, which is the affective tone determining the effectiveness of that prehension in that occasion of experience. How the experience constitutes itself depends on its complex of subjective forms.

§5. *Individuality.*—The individual immediacy of an occasion is the final unity of subjective form, which is the occasion as an absolute reality. This immediacy is its moment of sheer indi-

viduality, bounded on either side by essential relativity. The occasion arises from relevant objects, and perishes into the status of an object for other occasions. But it enjoys its decisive moment of absolute self-attainment as emotional unity. As used here the words 'individual' and 'atom' have the same meaning, that they apply to composite things with an absolute reality which their components lack. These words properly apply to an actual entity in its immediacy of self-attainment when it stands out as for itself alone, with its own affective self-enjoyment. The term 'monad' also expresses this essential unity at the decisive moment, which stands between its birth and its perishing. The creativity of the world is the throbbing emotion of the past hurling itself into a new transcendent fact. It is the flying dart, of which Lucretius speaks, hurled beyond the bounds of the world.

§6. *Knowledge.*—All knowledge is conscious discrimination of objects experienced. But this conscious discrimination, which is knowledge, is nothing more than an additional factor in the subjective form of the interplay of subject with object. This interplay is the stuff constituting those individual things which make up the sole reality of the Universe. These individual things are the individual occasions of experience, the actual entities.

But we do not so easily get rid of knowledge. After all, it is knowledge that philosophers seek. And all knowledge is derived from, and verified by, direct intuitive observation. I accept this axiom of empiricism as stated in this general form. The question then arises how the structure of experience outlined above is directly observed. In answering this challenge I remind myself of the old advice that the doctrines which best repay critical examination are those which for the longest period have remained unquestioned.

§7. *Sense-Perception.*—The particular agelong group of doctrines which I have in mind is: (1) that all perception is by the mediation of our bodily sense-organs, such as eyes, palates, noses, ears, and the diffused bodily organization furnishing touches, aches, and other bodily sensations; (2) that all percepta are bare sensa, in patterned connections, given in the immediate present; (3) that our experience of a social world is an interpretative reaction wholly derivative from this perception; (4) that our

emotional and purposive experience is a reflective reaction derived from the original perception, and intertwined with the interpretative reaction and partly shaping it. Thus the two reactions are different aspects of one process, involving interpretative, emotional, and purposive factors. Of course, we are all aware that there are powerful schools of philosophy which explicitly reject this doctrine. Yet I cannot persuade myself that this rejection has been taken seriously by writers belonging to the schools in question. When the direct question as to things perceived arises, it seems to me that the answer is always returned in terms of sensa perceived.

§8. *Perceptive Functions.*—In the examination of the sensationalist doctrine, the first question to be asked concerns the general definition of what we mean by those functions of experience which we term 'perceptions'. If we define them as those experiential functions which arise directly from the stimulation of the various bodily sense-organs, then argument ceases. The traditional doctrine then becomes a mere matter of definition of the use of the word 'perception'. Indeed, having regard to long-standing usage, I am inclined to agree that it may be advisable for philosophers to confine the word 'perception' to this limited meaning. But the point on which I am insisting is that this meaning *is* limited, and that there is a wider meaning with which this limited use of the term 'perception' has been tacitly identified.

§9. *Objects.*—The process of experiencing is constituted by the reception of entities, whose being is antecedent to that process, into the complex fact which is that process itself. These antecedent entities, thus received as factors into the process of experiencing, are termed 'objects' for that experiential occasion. Thus primarily the term 'object' expresses the relation of the entity, thus denoted, to one or more occasions of experiencing. Two conditions must be fulfilled in order that an entity may function as an object in a process of experiencing: (1) the entity must be *antecedent,* and (2) the entity must be experienced in virtue of its antecedence; it must be *given.* Thus an object must be a thing received, and must not be either a *mode* of reception or a thing *generated* in that occasion. Thus the process of experiencing is constituted by the reception of objects into the unity

of that complex occasion which is the process itself. The process creates itself, but it does not create the objects which it receives as factors in its own nature.

'Objects' for an occasion can also be termed the 'data' for that occasion. The choice of terms entirely depends on the metaphor which you prefer. One word carries the literal meaning of 'lying in the way of', and the other word carries the literal meaning of 'being given to'. But both words suffer from the defect of suggesting that an occasion of experiencing arises out of a passive situation which is a mere welter of many data.

§10. *Creativity.*—The exact contrary is the case. The initial situation includes a factor of activity which is the reason for the origin of that occasion of experience. This factor of activity is what I have called 'Creativity'. The initial situation with its creativity can be termed the initial phase of the new occasion. It can equally well be termed the 'actual world' relative to that occasion. It has a certain unity of its own, expressive of its capacity for providing the objects requisite for a new occasion, and also expressive of its conjoint activity whereby it is essentially the primary phase of a new occasion. It can thus be termed a 'real potentiality'. The 'potentiality' refers to the passive capacity, the term 'real' refers to the creative activity, where the Platonic definition of 'real' in the *Sophist* is referred to. This basic situation, this actual world, this primary phase, this real potentiality—however you characterize it—as a whole is active with its inherent creativity, but in its details it provides the passive objects which derive their activity from the creativity of the whole. The creativity is the actualization of potentiality, and the process of actualization is an occasion of experiencing. Thus viewed in abstraction objects are passive, but viewed in conjunction they carry the creativity which drives the world. The process of creation is the form of unity of the Universe.

§11. *Perception.*—In the preceding sections, the discovery of objects as factors in experience was explained. The discussion was phrased in terms of an ontology which goes beyond the immediate purpose, although the status of objects cannot be understood in the absence of some such ontology explaining their func-

tion in experience, that is to say, explaining why an occasion of experience by reason of its nature requires objects.

The objects are the factors in experience which function so as to express that that occasion originates by including a transcendent universe of other things. Thus it belongs to the essence of each occasion of experience that it is concerned with an otherness transcending itself. The occasion is one among others, and including the others which it is among. Consciousness is an emphasis upon a selection of these objects. Thus perception is consciousness analysed in respect to those objects selected for this emphasis. Consciousness is the acme of emphasis.

It is evident that this definition of perception is wider than the narrow definition based upon sense-perception, sensa, and the bodily sense-organs.

§12. *Non-Sensuous Perception.*—This wider definition of perception can be of no importance unless we can detect occasions of experience exhibiting modes of functioning which fall within its wider scope. If we discover such instances of non-sensuous perception, then the tacit identification of perception with sense-perception must be a fatal error barring the advance of systematic metaphysics.

Our first step must involve the clear recognition of the limitations inherent in the scope of sense-perception. This special mode of functioning essentially exhibits percepta as *here, now, immediate,* and *discrete.* Every impression of sensation is a distinct existence, declares Hume; and there can be no reasonable doubt of this doctrine. But even Hume clothes each impression with force and liveliness. It must be distinctly understood that no prehension, even of bare sensa, can be divested of its affective tone, that is to say, of its character of a 'concern' in the Quaker sense. Concernedness is of the essence of perception.

Gaze at a patch of red. In itself as an object, and apart from other factors of concern, this patch of red, as the mere object of that present act of perception, is silent as to the past or the future. How it originates, how it will vanish, whether indeed there was a past, and whether there will be a future, are not disclosed by its own nature. No material for the interpretation of sensa is provided by the sensa themselves, as they stand starkly, barely, present

and immediate. We *do* interpret them; but no thanks for the feat is due to them. The epistemologies of the last two hundred years are employed in the tacit introduction of alien considerations by the uncritical use of current forms of speech. A copious use of simple literary forms can thus provide a philosophy delightful to read, easy to understand, and entirely fallacious. Yet the usages of language do prove that our habitual interpretations of these barren sensa are in the main satisfying to common sense, though in particular instances liable to error. But the evidence on which these interpretations are based is entirely drawn from the vast background and foreground of non-sensuous perception with which sense-perception is fused, and without which it can never be. We can discern no clean-cut sense-perception wholly concerned with present fact.

In human experience, the most compelling example of non-sensuous perception is our knowledge of our own immediate past. I am not referring to our memories of a day past, or of an hour past, or of a minute past. Such memories are blurred and confused by the intervening occasions of our personal existence. But our immediate past is constituted by that occasion, or by that group of fused occasions, which enters into experience devoid of any perceptible medium intervening between it and the present immediate fact. Roughly speaking, it is that portion of our past lying between a tenth of a second and half a second ago. It is gone, and yet it is here. It is our indubitable self, the foundation of our present existence. Yet the present occasion while claiming self-identity, while sharing the very nature of the byegone occasion in all its living activities, nevertheless is engaged in modifying it, in adjusting it to *other* influences, in completing it with *other* values, in deflecting it to *other* purposes. The present moment is constituted by the influx of *the other* into that self-identity which is the continued life of the immediate past within the immediacy of the present.

§13. *Illustration.*—Consider a reasonably rapid speaker enunciating the proper name 'United States'. There are four syllables here. When the third syllable is reached, probably the first is in the immediate past; and certainly during the word 'States' the first syllable of the phrase lies beyond the immediacy of the

present. Consider the speaker's own occasions of existence. Each occasion achieves for him the immediate sense-presentation of sounds, the earlier syllables in the earlier occasions, the word 'States' in the final occasion. As mere sensuous perception, Hume is right in saying that the sound 'United' as a mere sensum has nothing in its nature referent to the sound 'States', yet the speaker is carried from 'United' to 'States', and the two conjointly live in the present, by the energizing of the past occasion as it claims its self-identical existence as a living issue in the present. The immediate past as surviving to be again lived through in the present is the palmary instance of non-sensuous perception.

The Humian explanation, involving the 'association of ideas', has its importance for this topic. But it is not to the point for this example. The speaker, a citizen of the United States and therefore dominated by an immense familiarity with that phrase, may in fact have been enunciating the phrase 'United Fruit Company'—a corporation which, for all its importance, he may not have heard of till half a minute earlier. In his experience the relation of the later to the earlier parts of this phrase is entirely the same as that described above for the phrase 'United States'. In this latter example it is to be noted that while association would have led him to 'States', the fact of the energizing of the immediate past compelled him to conjoin 'Fruit' in the immediacy of the present. He uttered the word 'United' with the non-sensuous anticipation of an immediate future with the sensum 'Fruit', and he then uttered the word 'Fruit' with the non-sensuous perception of the immediate past with the sensum 'United'. But, unfamiliar as he was with the United Fruit Company, he had no association connecting the various words in the phrase 'United Fruit Company'; while, patriot as he was, the orator had the strongest association connecting the words 'United' and 'States'. Perhaps indeed he was the founder of the Company, and also invented the name. He then uttered the mere sounds 'United Fruit Company' for the first time in the history of the English language. There could not have been the vestige of an association to help him along. The final occasion of his experience which drove his body to the utterance of the sound 'Company' is only

explicable by his concern with the earlier occasions with their subjective forms of intention to procure the utterance of the complete phrase. Also, in so far as there was consciousness, there was direct observation of the past with its intention finding its completion in the present fact. This is an instance of direct intuitive observation which is incapable of reduction to the sensationalist formula. Such observations have not the clear sharp-cut precision of sense-perception. But surely there can be no doubt about them. For instance, if the speaker had been interrupted after the words 'United Fruit', he might have resumed his speech with the words 'I meant to add the word Company'. Thus during the interruption, the past was energizing in his experience as carrying in itself an unfulfilled intention.

§14. *Conformation of Feeling.*—Another point emerges in this explanation, namely, the doctrine of the continuity of nature. This doctrine balances and limits the doctrine of the absolute individuality of each occasion of experience. There is a continuity between the subjective form of the immediate past occasion and the subjective form of its primary prehension in the origination of the new occasion. In the process of synthesis of the many basic prehensions modifications enter. But the subjective forms of the immediate past are continuous with those of the present. I will term this doctrine of continuity, the Doctrine of Conformation of Feeling.

Suppose that for some period of time some circumstance of his life has aroused anger in a man. How does he now know that a quarter of a second ago he was angry? Of course, he remembers it; we all know that. But I am enquiring about this very curious fact of memory, and have chosen an overwhelmingly vivid instance. The mere word 'memory' explains nothing. The first phase in the immediacy of the new occasion is that of the conformation of feelings. The feeling as enjoyed by the past occasion is present in the new occasion as datum felt, with a subjective form conformal to that of the datum. Thus if A be the past occasion, D the datum felt by A with subjective form describable as A angry, then this feeling—namely, A feeling D with subjective form of anger—is initially felt by the new occasion B with the same subjective form of anger. The anger is continuous throughout the

successive occasions of experience. This continuity of subjective form is the initial sympathy of B for A. It is the primary ground for the continuity of nature.

Let us elaborate the consideration of the angry man. His anger is the subjective form of his feeling some datum D. A quarter of a second later he is, consciously, or unconsciously, embodying his past as a datum in the present, and maintaining in the present the anger which is a datum from the past. In so far as that feeling has fallen within the illumination of consciousness, he enjoys a non-sensuous perception of the past emotion. He enjoys this emotion both objectively, as belonging to the past, and also formally as continued in the present. This continuation is the continuity of nature. I have labored this point, because traditional doctrines involve its denial.

Thus non-sensuous perception is one aspect of the continuity of nature.

§15. *Hume's Doctrine of Custom.*—Hume appeals to a doctrine of force and liveliness as an essential factor in an impression of sensation. This doctrine is nothing but a special case of the doctrine of subjective forms. Again he holds that the force and liveliness of one occasion of experience enter into the character of succeeding occasions. The whole doctrine of 'custom' depends on this assumption. If the occasions be entirely separate, as Hume contends, this transition of character is without any basis in the nature of things. What Hume, in his appeal to memory, is really doing is to appeal to an observed immanence of the past in the future, involving a continuity of subjective form.

With this addition, every argument of Part III of Hume's *Treatise* can be accepted. But the conclusion follows that there is an observed relation of causation between such occasions. The general character of this observed relation explains at once memory and personal identity. They are all different aspects of the doctrine of the immanence of occasions of experience. The additional conclusion can also be derived, that in so far as we apply notions of causation to the understanding of events in nature, we must conceive these events under the general notions which apply to occasions of experience. For we can only understand causation in terms of our observations of these occasions. This appeal to

Hume has the sole purpose of illustrating the common-sense obviousness of the present thesis.

§16. *The Flux of Energy.*—An occasion of experience which includes a human mentality is an extreme instance, at one end of the scale, of those happenings which constitute nature. As yet this discussion has fixed attention upon this extreme. But any doctrine which refuses to place human experience outside nature, must find in descriptions of human experience factors which also enter into the descriptions of less specialized natural occurrences. If there be no such factors, then the doctrine of human experience as a fact within nature is mere bluff, founded upon vague phrases whose sole merit is a comforting familiarity. We should either admit dualism, at least as a provisional doctrine, or we should point out the identical elements connecting human experience with physical science.

The science of physics conceives a natural occasion as a locus of energy. Whatever else that occasion may be, it is an individual fact harboring that energy. The words electron, proton, photon, wave-motion, velocity, hard and soft radiation, chemical elements, matter, empty space, temperature, degradation of energy, all point to the fact that physical science recognizes qualitative differences between occasions in respect to the way in which each occasion entertains its energy.

These differences are entirely constituted by the flux of energy, that is to say, by the way in which the occasions in question have inherited their energy from the past of nature, and in which they are about to transmit their energy to the future. The discussion of the Poynting Flux of Energy is one of the most fascinating chapters of Electrodynamics. Forty-seven years ago, when a young graduate student, I first heard of it in a lecture delivered by Sir J. J. Thomson. It was then a new discovery recently published by Poynting. But its father was the great Clerk-Maxwell who had expounded all the requisite principles. The sole conclusion with which we are concerned is that energy has recognizable paths through time and space. Energy passes from particular occasion to particular occasion. At each point there is a flux, with a quantitative flow and a definite direction.

This is a conception of physical nature in terms of continuity. In fact, the concept of continuity was dominant in Clerk-Maxwell's thought. But the alternative concept of distinguishable individualities has again emerged into importance in the more recent physics. Electrons and protons and photons are unit charges of electricity; also there are the quanta of the flux of energy. These contrasted aspects of nature, continuity and atomicity, have a long history in European thought, reaching back to the origin of science among the Greeks. The more probable conclusion is that neither can be dispensed with, and that we are only witnessing that modern phase of the contrast which is relevant to the present stage of science.

§17. *Mind and Nature Compared.*—The doctrine of human experience which I have outlined above, also for its own purposes preserves a doctrine of distinguishable individualities which are the separate occasions of experience, and a doctrine of continuity expressed by the identity of subjective form inherited conformally from one occasion to the other. The physical flux corresponds to the conformal inheritance at the base of each occasion of experience. This inheritance, in spite of its continuity of subjective form, is nevertheless an inheritance from definite individual occasions. Thus, if the analogy is to hold, in the account of the general system of relations binding the past to the present, we should expect a doctrine of quanta, where the individualities of the occasions are relevant, and a doctrine of continuity where the conformal transference of subjective form is the dominating fact.

The notion of physical energy, which is at the base of physics, must then be conceived as an abstraction from the complex energy, emotional and purposeful, inherent in the subjective form of the final synthesis in which each occasion completes itself. It is the total vigor of each activity of experience. The mere phrase that 'physical science is an abstraction', is a confession of philosophic failure. It is the business of rational thought to describe the more concrete fact from which that abstraction is derivable.

§18. *Personality.*—In our account of human experience we have attenuated human personality into a genetic relation between occasions of human experience. Yet personal unity is an inescapable

fact. The Platonic and Christian doctrines of the Soul, the Epicurean doctrine of a Concilium of subtle atoms, the Cartesian doctrine of Thinking Substance, the Humanitarian doctrine of the Rights of man, the general Common Sense of civilized mankind,—these doctrines between them dominate the whole span of Western thought. Evidently there is a fact to be accounted for. Any philosophy must provide some doctrine of personal identity. In some sense there is a unity in the life of each man, from birth to death. The two modern philosophers who most consistently reject the notion of a self-identical Soul-Substance are Hume and William James. But the problem remains for them, as it does for the philosophy of organism, to provide an adequate account of this undoubted personal unity, maintaining itself amidst the welter of circumstance.

§19. *Plato's Receptacle.*—In mathematical studies, where there is a problem to be solved it is a sound method to generalize, so as to divest the problem of details irrelevant to the solution. Let us therefore give a general description of this personal unity, divesting it of minor details of humanity. For this purpose it is impossible to improve upon a passage from one of Plato's Dialogues. I summarize it with the insertion of such terms as 'personal unity', 'events', 'experience', and 'personal identity', for two or three of its own phrases. "In addition to the notions of the welter of events and of the forms which they illustrate, we require a third term, personal unity. It is a perplexed and obscure concept. We must conceive it the receptacle, the foster-mother as I might say, of the becoming of our occasions of experience. This personal identity is the thing which receives all occasions of the man's existence. It is there as a natural matrix for all transitions of life, and is changed and variously figured by the things that enter it; so that it differs in its character at different times. Since it receives all manner of experiences into its own unity, it must itself be bare of all forms. We shall not be far wrong if we describe it as invisible, formless, and all-receptive. It is a locus which persists, and provides an emplacement for all the occasions of experience. That which happens in it is conditioned by the compulsion of its own past, and by the persuasion of its immanent ideals."

You will have recognized that in this description I have been adapting from Plato's *Timaeus*,[1] with the slightest of changes. But this is not Plato's description of the Soul. It is his doctrine of the Receptacle (ὑποδοχή) or Locus (χώρα) whose sole function is the imposition of a unity upon the events of Nature. These events are together by reason of their community of locus, and they obtain their actuality by reason of emplacement within this community.

§20. *Immanence.*—This is at once the doctrine of the unity of nature, and of the unity of each human life. The conclusion follows that our consciousness of the self-identity pervading our life-thread of occasions, is nothing other than knowledge of a special strand of unity within the general unity of nature. It is a locus within the whole, marked out by its own peculiarities, but otherwise exhibiting the general principle which guides the constitution of the whole. This general principle is the object-to-subject structure of experience. It can be otherwise stated as the vector-structure of nature. Or otherwise, it can be conceived as the doctrine of the immanence of the past energizing in the present.

This doctrine of immanence is practically that doctrine adumbrated by the Hellenistic Christian theologians of Egypt. But they applied the doctrine only to the relation of God to the World, and not to all actualities.

§21. *Space and Time.*—The notion of Space-Time represents a compromise between Plato's basic Receptacle, imposing no forms, and the Actual World imposing its own variety of forms. This imposition of forms is subject to the perspective elimination required by incompatibilities of affective tone. Geometry is the doctrine of loci of intermediaries imposing perspective in the process of inheritance. In geometry this doctrine is restricted to its barest generalities of coördination prevailing for this epoch of the Universe. These generalities solely concern the complex of serial relations persistently illustrated in the connection of events.

Our perception of this geometrical order of the Universe brings with it the denial of the restriction of inheritance to mere personal order. For personal order means one-dimensional serial order.

[1] I have used A. E. Taylor's translation, with compression and changes of phrase.

And space is many-dimensional. Spatiality involves separation by reason of the diversity of intermediate occasions, and also it involves connection by reason of the immanence involved in the derivation of present from past. There is thus an analogy between the transference of energy from particular occasion to particular occasion in physical nature and the transference of affective tone, with its emotional energy, from one occasion to another in any human personality. The object-to-subject structure of human experience is reproduced in physical nature by this vector relation of particular to particular. It was the defect of the Greek analysis of generation that it conceived it in terms of the bare incoming of novel abstract form. This ancient analysis failed to grasp the real operation of the antecedent particulars imposing themselves on the novel particular in process of creation. Thus the geometry exemplified in fact was disjoined from their account of the generation of fact.

§22. *The Human Body.*—But this analogy of physical nature to human experience is limited by the fact of the linear seriality of human occasions within any one personality and of the many-dimensional seriality of the occasions in physical Space-Time.

In order to prove that this discrepancy is only superficial, it now remains for discussion whether the human experience of direct inheritance provides any analogy to this many-dimensional character of space. If human occasions of experience essentially inherit in one-dimensional personal order, there is a gap between human occasions and the physical occasions of nature.

The peculiar status of the human body at once presents itself as negating this notion of strict personal order for human inheritance. Our dominant inheritance from our immediately past occasion is broken into by innumerable inheritances through other avenues. Sensitive nerves, the functionings of our viscera, disturbances in the composition of our blood, break in upon the dominant line of inheritance. In this way, emotions, hopes, fears, inhibitions, sense-perceptions arise, which physiologists confidently ascribe to the bodily functionings. So intimately obvious is this bodily inheritance that common speech does not discriminate the human body from the human person. Soul and body are fused together. Also this common identification has survived the scien-

tific investigation of physiologists, who are apt to see more body than soul in human beings.

But the human body is indubitably a complex of occasions which are part of spatial nature. It is a set of occasions miraculously coördinated so as to pour its inheritance into various regions within the brain. There is thus every reason to believe that our sense of unity with the body has the same origin as our sense of unity with our immediate past of personal experience. It is another case of non-sensuous perception, only now devoid of the strict personal order.

But physiologists and physicists are equally agreed that the body inherits physical conditions from the physical environment according to the physical laws. There is thus a general continuity between human experience and physical occasions. The elaboration of such a continuity is one most obvious task for philosophy.

§23. *Dualism.*—This discussion has begged your attention to a complex argument. The topic is a large one, and the restrictions of time have made it impossible for the argument to rest upon the way. I will conclude by drawing attention to a general question which is relevant.

Is this discussion to be looked upon as another example of *The Revolt against Dualism?* We have all read with high appreciation Professor Lovejoy's brilliant book in criticism of this revolt. Now superficially the position which I have here put forward is certainly an instance of the revolt which he criticizes. But in another sense, I have endeavored to put forward a defence of dualism, differently interpreted. Plato, Descartes, Locke, prepared the way for Hume; and Kant followed upon Hume. The point of this address is to show an alternative line of thought which evades Hume's deduction from philosophical tradition, and at the same time preserves the general trend of thought received from his three great predecessors. The dualism in the later Platonic dialogues between the Platonic 'souls' and the Platonic 'physical' nature, the dualism between the Cartesian 'thinking substances' and the Cartesian 'extended substances', the dualism between the Lockian 'human understanding' and the Lockian 'external things' described for him by Galileo and Newton—all these kindred dualisms are here found within each occasion of actuality.

Each occasion has its physical inheritance and its mental reaction which drives it on to its self-completion. The world is not merely physical, nor is it merely mental. Nor is it merely *one* with many subordinate phases. Nor is it merely a complete fact, in its essence static with the illusion of change. Wherever a vicious dualism appears, it is by reason of mistaking an abstraction for a final concrete fact.

The universe is dual because, in the fullest sense, it is both transient and eternal. The universe is dual because each final actuality is both physical and mental. The universe is dual because each actuality requires abstract character. The universe is dual because each occasion unites its formal immediacy with objective otherness. The universe is *many* because it is wholly and completely to be analysed into many final actualities—or in Cartesian language, into many *res verae*. The Universe is *one*, because of the universal immanence. There is thus a dualism in this contrast between the unity and multiplicity. Throughout the universe there reigns the union of opposites which is the ground of dualism.

A. N. WHITEHEAD

HARVARD UNIVERSITY

CHANCE AND COSMOGONY *

"IN the mists before the Beginning, Fate and Chance cast lots to decide whose the Game should be; and he that won strode through the mists to MANA-YOOD-SUSHAI and said: 'Now make gods for Me, for I have won the cast and the Game is to be Mine.' Who it was that won the cast, and whether it was Fate or whether Chance that went through the mists before the Beginning to MANA-YOOD-SUSHAI—none knoweth."

So Dunsany began his most delightful philosophical fantasy.

I never wrote a presidential address before, but I have heard some, and it seems to be the custom to make random tracks across the cosmos in somewhat Spenglerian fashion. I feel it my duty to conform. To adapt my title to my procedure I have called my address *Chance and Cosmogony*. Seriously, I wish to consider some first things in philosophy, of which the most inclusive is Chance. Nearly everything of importance in American philosophy stems from the thoughts of Charles Peirce, and not least in value among these thoughts were his speculations on Chance. In his "Tychism" he gave a theory and a name. This address is a reflection on the subject of Chance.

PART I. PROBABILITY

I shall begin with a discussion of probability. In a preliminary part of this paper I cannot expect to get to the bottom of a subject in which acute logicians differ. But there are certain principles of probability that are indispensable. The principles are irrelevancy and parsimony. Before discussing these there should be certain introductory statements.

1. All scientific and philosophical inference as to matter of fact is inductive.

2. All inductive inference is probably inference. It lacks certainty and if it does not contain any probability its validity is null.

* The presidential address to the Pacific division of the American Philosophical Association, at Stanford University, December 29, 1931.

3. Probability is a relation between premises and conclusion. The conclusion is probable only with respect to the premises. This is now a commonplace.

4. Charles Peirce's frequency-theory is, I believe, in its essentials, true (and much neglected).[1] First, I do not mean by probability something indefinable (Keynes' view), and, if I did, I do not see how I could generate frequencies from it. Second, Venn's *a posteriori* frequency-theory is certainly erroneous. Third, Peirce's frequency-theory, however, will admit an *a priori* as well as an observational frequency. This view I believe is fundamentally true. I will state it in Peirce's words. He says, ". . . an argument is always conceived as the member of a *genus* of arguments all constructed in the same way, and such that when their premises are real facts, their conclusions are also. If the argument is demonstrative, then this is always so; if it is only probable, then it is for the most part so . . . in the long run, there is a real fact which corresponds to the idea of probability, and it is that a given mode of inference sometimes proves successful and sometimes not, and that in a ratio ultimately fixed. . . . We may, therefore, define the probability of a mode of argument as the proportion of cases in which it carries truth with it." [2]

5. Inductions are of two sorts:

a. Generalization of laws and correlations.

b. Establishment of theories.

6. In generalization I shall deal only with law. Law, however, cannot be divorced from cause. I assume that no competent philosopher since Hume can believe in a logically necessary relation between cause and effect. But Hume's causal relation includes sequence and contiguity as well as uniformity. A scientist may out-Hume Hume and define law as a mere functional relationship, but every sane philosopher must believe in a contiguity of some sort underlying the functional relationship. Without contiguity we have windowless monads. Apparent causality would be mere coincidence and any sort of uniformity would be exceedingly improbable. Whatever more they may be, cause and effect are contiguous segments of a temporal process. I notice that Lenzen, in

[1] Ramsey and Cohen are honorable exceptions.

[2] *Chance, Love and Logic*, pp. 67 ff.

his excellent description of physical theory,[3] has included contiguity and succession in his principle of causality.

The notion of a precise cause, however, goes beyond Hume—no relevant factors in the antecedent must be left out and no irrelevant factors put in. No factor in the cause can be omitted (this is Mill's unconditional antecedent) and no factor is superfluous—both by definition. If the collocation *abcde* is contiguously followed by *t*, I should regard *abc* as the cause of *t* if *t* would not have taken place in the absence of either *a* or *b* or *c*, the relevant factors, and if *t* would have taken place in the absence of either *d* or *e*, the irrelevant factors (complicating cases are purposely left out).

I agree with Ducasse[4] that we may define a cause of a single event. It is also apparent that no one could determine the cause without uniformity, so for all practical purposes (and this is the definition which I adopt) the notion of a cause involves, first, succession; second, contiguity; third, sufficiency; fourth, relevancy; fifth, uniformity. One more definition is needed. I shall speak of an indirect causal relation between *a* and *t* when neither is the cause of the other but both are effects of the same cause *b*.

In a suggested functional relation between *a* and *t*, one of the following four relations holds:

1. There is no functional relation between *a* and *t*. No causality, direct or indirect. In the other relations, there is a functional relation.

2. *b* is the cause of both *a* and *t*. Indirect causality.

3. *a* is either a part or contains a part of the cause of *t*. Direct and partial causality.

4. *a* is the whole or contains the whole of the cause of *t*. Direct and total causality.

The only way we could even make an attempt to establish the third or the fourth relation is by experiment, and the method of difference. The fourth relation, obviously, can never be established since we can never eliminate by experiment the remainder of the universe. The third, also (except possibly for psychical causes) could never be established without some theory. Selective

[3] *The Nature of Physical Theory.*

[4] *Causation and Types of Necessity.*

naïve realism is the only theory which maintains that we directly observe a part of the cause of an event in the external world, and selective naïve realism is itself a theory, and, I may add, a most improbable one. The best that we can do is, making the assumption of memory and the assumption of extrapolation, to eliminate the first relation above and to advance to the second (strictly, a position of ignorance whether we have the second or the third). But this will give us no certainty of direct causation. Without a valid theory we are restricted to positivism. We should have a law in the sense of a functional relation between facts of experience,[5] but no knowledge of an external world,—hence no knowledge of cosmology, none of causality and none, except as to phenomenal unpredictability, of chance. Hence we are concerned with theory in this paper, even as all metaphysics is concerned with theory.

I. *Probability of Theory.* I shall pass over the well-known procedure of the establishment of theory with its three parts, the invention of hypothesis, the deduction of predictions from the hypothesis, and the verification of these predictions by comparison or confrontation, either with facts and laws already known or with new facts and laws determined by further experiment. I pass over also any account of the crucial experiment, which still retains its validity in a modified form in spite of Duhem's adverse criticism (if H and H' are rival hypotheses and M is an already established theory, the crucial experiment is between $M \cdot H$ on the one hand and $M \cdot H'$ on the other). I come to the tests of a theoretical hypothesis. Nearly all the accounts of the tests contain a threefold classification. The tests are (1) consistency, (2) adequacy or sufficiency and (3) simplicity or parsimony; relevancy being often mentioned somewhere on the side. I shall reconstruct the classification of these tests in what seems to me a correct form. It is as follows.

I. *Consistency* with

1. (*a*) itself and (*b*) other accepted theory.
2. (*a*) the assumptions and (*b*) the facts and laws of science.

[5] Nicod has given us the most accurate account of the logic of generalization that we possess.

II. *Probability*

3. Irrelevancy.
4. Sufficiency together with parsimony (what might be called parsimonious sufficiency).

This classification has three merits. First, the main distinction is between the deductive tests of consistency and the inductive tests of probability. Second, relevancy is introduced where it belongs, as one test of probability. Third, sufficiency and parsimony are grouped together as two phases of a single test. With a complicated hypothesis one can always get a sufficient explanation of anything—the Ptolemaic hypothesis is the classical example. The entire merit of the method is that it secures an explanation as parsimonious as all the pertinent facts and laws permit. I shall make no comment on the consistency-tests but pass at once to probability.

II. *Irrelevance and Occam's Razor.* The ordinary scientific canon of relevance is simple enough. If HK is an hypothesis that explains the pertinent facts and laws, but if H alone explains the same facts and laws, and K explains nothing, *i.e.* if all the explanatory power of HK is due to H, then K is dismissed as superfluous. Whatever the antecedent probability of H may be, the probability of HK is less than the probability of H, unless K is a certainty or H has less than a finite probability. In science K is discarded and that is the end of it.

But for philosophy and common sense this is not satisfactory. If K is an idle addition we naturally believe it to be improbable. I assume we have no direct evidence for it in perception or memory, and there is, by definition, no indirect evidence for it. Do we have an improbability against it or are we justified as rational beings in saying nothing further about it? Let us take a concrete case, one which I once disputed with a philosophical adversary. Let me make the conjecture that there are seventeen invisible red faeries, no less and no more, now dancing on this table. There is no direct evidence or deductive proof either for or against this delightful hypothesis. We all disbelieve it. Is there any justification for the disbelief? The adversary maintained there is no probability one way or the other, that the probability for the hypothesis is not one half—the question is altogether beyond the

range of probability. The ordinary individual believes, however, that he is right in denying the existence of the faeries, although he is at a loss to justify his denial. I took an unfair advantage of my opponent in using the number seventeen. If we make no restrictions as to the size of the faeries one finite number is neither more nor less probable than any other, so by the principle of indifference the number seventeen is improbable. Let us make the hypothesis, then, that there are red faeries dancing upon the table. It is useless to say that if there are any supernatural beings on the table they might be dryads or leprechauns or grinjamons instead of faeries, because there might be all four. Seventeen, no more, no less, excludes sixteen or eighteen, but faeries do not exclude leprechauns. I know of no way of reaching an improbability except by appealing to the principle of indifference, as indeed I did in showing the improbability of the number seventeen.[6]

Let us ask the widest of all relevant questions. What is the probability of anything supernatural but connected in some way with any part of space-time? I know no evidence for the hypothesis or against it, so I will put the probability at one half. This may be too generous, since there is a still wider question, whether there is anything supernatural at all, but we will let this pass. What is the probability of something supernatural connected with the galaxy? Very much less. And so on down to the table. What is the probability of a supernatural being on the table similar to an animal? And so on down through the zoological classification until we arrive at creatures who resemble man. From beings similar to man we must pass to faeries and from faeries to red faeries. With every addition of a specific difference we lessen the probability. The commonsense view is justified. The probability of there being both red faeries and dryads is still less. With every addition of an independent hypothesis we lessen the probability.

Such improbability would reach its maximum with the *ens realissimum,* in which both improbabilities are combined to a superlative degree. The ontological and cosmological arguments

[6] The probability of these examples possesses little 'weight' in the technical sense.

for the existence of such an entity are not valid. So we arrive at this curious conclusion—the *ens realissimum,* instead of being certain, is the most improbable of all conceivable things. William James used to say that in metaphysics we should beg as little as possible, but the believer in the *ens realissimum* is a beggar of cosmic proportions. When Holt, in *The Concept of Consciousness,* took for granted not only all existence but a hypostasized subsistence as well, he achieved the distinction of becoming the greatest of all possible cosmic, or shall I say super-cosmic, beggars, since he begged not only all the actual but all the possible—the possible converted into a kind of actual.

Going back to our general question, the superfluous hypothesis K is improbable (assuming it is a pure invention of the world of theory) in a degree proportioned to its specificity and to its aggregation; *i.e.,* not only is HK less probable than H but K is positively improbable, although, of course, with no precise numerical measure.

I once listened to an address by Sir Oliver Lodge in defense of Spiritism, the last half of which consisted mainly of anecdotes. I am sure it is no understatement to remark that if the speech had been published Professor Coover would have said that the record did not offer any material evidence in support of the hypothesis. I was much surprised to find that Sir Oliver devoted the entire first half of his argument to the attempt to show that while the scientists are right in what they affirm, they are wrong in what they deny, and that there is no antecedent improbability against any imaginary hypothesis. I should call such a thesis *the principle of credulity.* It obviously opens wide the door to all forms of superstition—if the chances of any wild hypothesis being true are fifty-fifty, it takes only a little of the Will to Believe to tip the scale.

III. *Principle of Parsimony.* The principle of parsimony is also simple in its scientific use. Let us suppose that H implies a given set of facts and laws, and a rival hypothesis $LMNOP$, composed of independent constituents, implies the same facts and laws. If H, by the principle of indifference, is equally probable with, say, L, each being equally specific and simple, then H is accepted as the scientific theory and $LMNOP$ is discarded. This is entirely satisfactory in a positivistic science.

In order, however, to establish a metaphysical theory more is necessary. We want more than comparative probability. We need a simple probability in favor of *H* and an improbability against *LMNOP*. Poincaré seems certainly wrong in maintaining that we prefer the more parsimonious hypothesis as a matter of convenience only. He would not allow even comparative probability. For the same principle is at stake in all circumstantial evidence. Suppose, for example, we have a case of murder, with ten revelant facts, *abcd . . . j*, and the hypothesis *H* (that Smith committed the murder) explains all these facts. The attorney for the defense constructs ten hypotheses, *LMN . . . T*, all without direct evidence, each of which explains one of these facts. I assume that all the eleven hypotheses are of about equal degrees of complexity and of antecedent probability. Any rational jury (if such exists) would decide that Smith is guilty beyond a reasonable doubt, provided they considered only the two alternatives. If we arbitrarily take even such a large number as 1/2 as the probability of *H*, then $(1/2)^{10}$ or 1/1024 will be the probability of *LMN . . . T*, a ratio of 512 to 1. According to Poincaré's reasoning it would be merely more convenient for the jury to decide that Smith should hang, but certainly the probability against the whole set of hypotheses, each of which we say is invented *ad hoc*, is very great. The principle involved here is similar to the principle of irrelevance above. If the antecedent improbability of *H* is equal to that of *L*, then the probability of *H* relative to *LMN . . . T* is the same as that of *H* relative to *HMN . . . T*. This, however, gives only comparative probability.

The simple probability in favor of *H* is more difficult to determine because we may have as possible rivals a number of other hypotheses still unthought of. The principle involved here seems to be the same as in Nicod's conclusion about possible laws. If we may start with any finite probability, however small, in favor of *H*, this probability will increase indefinitely with its verification by each new independent law that it explains. There are, then, two difficulties: first, the assurance of the finite probability at the beginning, and, second, the determination of the degrees of probability attained by verification, including such questions as: When

does the probability exceed, say, 1/2, or, when does it greatly exceed 1/2, or, when does it become overwhelming?

As for the first difficulty, I might try the following suggestion. The possible hypotheses are either finite in number or infinite. If they are finite we may symbolize the number by n. I do not see why there should not be an infinite number of possible hypotheses to explain a law, but neither do I see why there should be an infinite number. My ignorance is complete. With the principle of indifference then I have no reason to suppose that the probability for an infinite number of hypotheses is greater than for a finite number. Let us then put the probability that there are a finite number of hypotheses as 1/2. It follows that any one hypothesis has an antecedent probability of $1/2n$, or, strictly, $1/2n + 1/\infty$. This, then, is the initial finite probability of H. This solution is not very satisfactory, since it rests upon ignorance. It has little 'weight' in the technical sense. But the presumption of an initial finite probability seems to rest upon some such basis.

Poincaré, in my opinion, has not succeeded in proving that there is in general such an infinite number of hypotheses. I am not concerned with the much-vaunted claim that one may have an infinite number of mechanical explanations. So far as I can see, all he has shown is that in the solution of certain problems the principle of least action is alone necessary, and that one may have as many mechanical explanations as one pleases, provided they are consistent with this principle. I am concerned only with the general thesis that adequate (or sufficient, as I should say) theoretical explanations are innumerable, and that our choice between them is a matter of convenience; simplicity is merely preferred.

Simplicity is an ambiguous term. There are three simplicities in scientific method.

1. The simplicity of relevance (Occam's razor). This was discussed in the last section.

2. The simplicity of parsimony; of the smallest number of independent hypotheses or of independent parts of an inclusive hypothesis.

3. Simplicity in the ease with which a mind may grasp a total structure. This I shall call the simplicity of convenience. There is, of course, such a simplicity as the third, and Poincaré is right

in regarding it as purely subjective. But it is different from the simplicity of parsimony, as Poincaré acknowledged in his section on the rotation of the earth, toward the end of his *Value and Science*. It is parsimony that unifies, and it is with this simplicity that I am now concerned. I wish to make the following points.

1. Even if there are innumerable hypotheses that explain a given set of facts and laws, this does not prove that there are innumerable hypotheses of equal parsimony.

2. We might have an infinite number of hypotheses which would explain one set of laws, and an infinite number of hypotheses which would explain another set of laws, but the two infinites might overlap in only a finite number of hypotheses, or even in only one. I owe this point to Professor E. T. Bell. Hence, there is no evidence for an infinity, or for a great number, or even for two equally parsimonious hypotheses which would explain all scientific laws.

3. If two hypotheses can be verified by the same set of facts they are either (*a*) mathematical transformations of each other, in which case they are the same hypothesis, or (*b*) one includes the other, in which case the including hypothesis contains an irrelevant part, or (*c*) the two hypotheses overlap. In the latter case it is the common part only which is verified. The limiting case would be one in which the common part is confined to the experiential laws. Such a limiting case we may get infrequently or not at all. Rival scientific hypotheses commonly contain the same set of equations. If the two diverse parts are equally parsimonious we are unable to choose between them. This is a limitation of scientific method. If, for example, the common part consists of the equations, and if, by definition, we call the two overlapping hypotheses models, then we cannot choose objectively between the two models.

4. Whether or not we finally arrive at the true hypothesis will depend on human inventiveness. A friend of mine once applied the term Nishi to someone who thought she knew all things. Let us use Nishi as a name for a mythical omniscient being. Then if Nishi's hypothesis is never imagined by any human scientist, all the hypotheses which are imagined and which lead to predictions diverse from the facts, would be broken down by a series of what

we might call crucial experiments between the imagined hypotheses and Nishi's true one.

5. Sometimes we have a limited number of hypotheses by the principle of excluded middle (in spite of Brouwer). For example, matter is either continuous or not continuous, and if the latter, it is either compact or discrete. It is, fortunately, with such alternatives as these that we are mainly concerned in philosophy—and I lay more stress upon this than upon any of the other points.

It is curious how the problem of the infinite perplexes us. It is a scandal in both deductive and inductive logic. What we commonly suppose we need in deductive logic is a proof of its consistency; what we need in inductive logic is a disproof of its consistency, for then the initial probability of an hypothesis would be finite. The scandal in deductive logic is that we are unable to prove it, and in inductive logic that we are unable to disprove it. The inductive half of logic cannot live with her and the deductive half thinks he ought not to live without her. If we could show the infinite to be inconsistent, both of our problems would be solved. As it is, perhaps all we have in induction is a presumption.

I mentioned above two difficulties. The second is the difficulty of the determination of the degree of the probability attained by repeated verifications. This difficulty is serious and, again, it is identical with the difficulty of circumstantial evidence. The rational jury, introduced above, has no hesitation in rejecting the set of conjectures conjured up *ad hoc* by the attorney for the defence—but there are other hypotheses that have not been mentioned. The jury must decide the probability beyond a reasonable doubt by what Charles Peirce would call presumption. And this seems to be the situation in science and philosophy. Heisenberg's principle of uncertainty is 'probably true'. The evidence in favor of the electronic theory or the quantum theory seems 'overwhelming'. This is, of course, always relative to the evidence at hand. I am unable to see how the human mind can ever get beyond this. I should not maintain that I have got to the bottom of the inductive problem, but I do maintain that one reason why it has so far not been solved is that presumptions have not been clearly and sufficiently considered. The situation seems to be this: we begin with

the presumption of a finite probability. This probability may be indefinitely increased by successive verifications, but there are no numerical milestones along the road, and it is a matter of presumption how far we have traveled.

At the end of this discussion of probability I offer the following suggestion—a valid induction is based upon three things: first, the assumption of memory; second, the assumption of extrapolation; and third, presumptions of initial and of subsequent probability; the three in a descending order of subjective certainty (or, if you prefer, animal faith). I cannot enter upon a discussion of the nature of assumption and presumption and their place in inductive reasoning.

To summarize the last two sections, I have attempted to show

1. (*a*) that a relevant hypothesis is more probable than an irrelevant one.

(*b*) and that a parsimonious hypothesis is more probable than an unparsimonious one. This probability is comparative.

2. (*a*) that irrelevant hypotheses are improbable to varying degrees.

(*b*) that parsimonious hypotheses followed by independent verifications are probable to degrees marked by a sense of presumption. This is simple probability (always, of course, with respect to the data or premises).

IV. *Use of Occam's Razor.* When we "run over" philosophical hypotheses with the principle of irrelevance "what havoc must we make"!

1. *Idealism* is the first to go. It is entirely possible, of course, but the arguments for it are wanting. Berkeley's famous axiom is a pseudo-axiom and the arguments of the German idealists are sophistries. Berkeley's God is more complicated than matter and the Panpsychists have multiplied consciousness beyond necessity. I shall consider a more simple notion of *Deus* than that of Berkeley in the next part.

2. *Monism.* Monism won an easy victory over the old pluralism or monadism. If the monads are to make up a world they must be really related. I ignore here Bradley's denial of relations, since they obviously exist. Leibniz' monads had no windows in the walls, but they were all skylight on the roofs. His monadism

was hence not a monadism, but contradicted itself. But in the concatenism of William James, developed from the synechism of Charles Peirce, we have a new and possible pluralism. I know of no considerations that force us to decide between concatenism and monism. Which is the more complicated hypothesis? Monism is obviously the simplest in the sense that it is the easiest to grasp, but this is our third simplicity—the simplicity of convenience—it carries with it no probability. Concatenism is intrinsically more parsimonious. If there are n entities in the universe, they are all, according to monism, included within one whole. There is an n-adic relation between them. If concatenism is true, all the relations may be of a much lower order—the upper limit of concatenism would be a world where the highest type of relation is $(n-1)$-adic. If we let n stand for the number of the aggregate of electrons and protons and photons in space-time, a relationship of a much lower type than the n-adic would do for a concatenistic world. In our present state of knowledge concatenism is probable. The principle we have used might seem to be the principle of parsimony, but strictly it is the principle of irrelevance. In a monistic universe every entity is related to every other entity. The n-adic relation includes all these dyadic relations as a part of itself. It includes also all triadic and tetradic relations and so on, up to and including the $(n-1)$-adic type, *i.e.* it includes all the relations that are necessary to constitute a concatenistic universe, and many others beside. These additional relations are irrelevant in reference to our present state of knowledge. This is the inductive evidence supporting the chain-theories of William James and Bertrand Russell.

3. *Absolute Idealism.* If idealism is improbable and monism is improbable, obviously absolute idealism is more improbable than either, since it combines the improbabilities of both.

4. *Compact and Continuous Orders.* Unless there is evidence in the shape of an *experimentum crucis,* compact orders are less probable than discrete orders; and continuous orders are less probable than those that are compact but not continuous.

5. *Infinity of Space.* In the absence of verification infinite space is less probable than finite space. At present, of course, the evidence all favors finite space.

6. *The Beginninglessness of Time.* In the absence of verification it is more probable that time had a beginning than that it had no beginning.

7. *The World of Ideas.* These are entirely irrelevant to the mundane world. Αγαθία is as mythical as Yahwé.

8. *Prime Matter.* There is no valid axiom of the identity of indiscernibles. Two particulars differ either in content or context or in a mysterious something called prime matter, of which one particular possesses one part (x_1) and the other possesses another part (x_2). Nevertheless, it is possible to explain the diversity completely through either content or context. Prime matter is cut away with the razor.

And so with the Scholastic and Lockian substance, and many another I-know-not-what.

PART II. COSMOLOGY

By piecing together the results obtained by the use of Occam's razor in the preceding section we have an outline of a general ontology. The ontology is realistic and not idealistic; concatenistic and not monistic; with no Ideas above and no prime matter below. And the burden of proof is laid heavily upon anyone who would assert that space is either continuous or infinite, or that there was never a beginning of time.

I shall proceed now to discuss one problem of cosmology which is necessary to my further advance. It is a fundamental question, the problem of teleology or design. Central to this enquiry is the explanation of adaptations.

Adaptation we call regulation in living things, conscious behavior in mind, custom and cultural achievement in society, all of which L. J. Henderson would say are preceded or at least accompanied by fitness in the inorganic environment. So far as one can see there are three and only three possible explanations that are available, (1) design, (2) orthogenesis, and (3) variation and selection. I shall consider these three in order.

1. *Teleology and Design.* As a result of the analyses of Hume and Kant there are certain well-known limitations of the argument for design. It is obvious that the argument does not prove (1) a creator, or (2) an external designer, or (3) a single designer, al-

though this might be probable by the principle of parsimony, or (4) an all-powerful designer, or (5) a perfectly good designer. But these limitations still leave the essence of the argument untouched. We still have the hypothesis of, let us say, (1) an internal non-creative designer with the omnipotence saved at the expense of the goodness, or (what is more pleasing) the goodness saved at the expense of the omnipotence.

The radical defect of the argument is something quite different. It is that the explanation is no less complicated than the theory to be explained—indeed, in a more usual use of the argument the explanatory principle is far more complicated than what is to be explained. We have a set of adaptations in the World which are to be explained, and we make the hypothesis of *Deus,* who has the knowledge of these adaptations, *i.e.* he already includes a similar set of adaptations within himself. And even if he works by some general formula without realizing all its consequences in detail we must add to this formula consciousness, knowledge, will, and creativeness. He thus becomes a more wonderful adaptive being than anything that he is to explain. It is a perfect example of a *deus ex machina,* of an unparsimonious hypothesis. And what is the explanation of this *Deus?* Either (1) a second *Deus,* or (2) orthogenesis (a child of mine once said that God grew like a plant and then made everything else), or (3) variation and selection—and so we are back where we started. It is a supreme illustration of an hypothesis that should not be accepted by a philosopher.

II. *Orthogenesis.* The hypothesis of orthogenesis is little, if any, better than the hypothesis of design. There have been several ways at least verbally distinct in which this has been conceived. First, as unconscious teleology; second, as a mysterious tendency to perfectability, or at least to adaptation; and third, as a direct march of a mechanism, though perhaps through successive forms of emergence, resulting in the adaptations of living and conscious things. But unconscious teleology is a contradiction in terms, and the Bergsonian tendency or *élan* explains nothing. It is only a revised version of the explanation of Molière's famous physician. It is the *Deus*-hypothesis camouflaged or, to change the figure, wrapped up in a *potentia.* Third, that the original blind mechanism should have been just the sort of mechanism that would

directly emerge into biological regulations is a decidedly improbable hypothesis. We have a mechanism instead of a mysterious tendency, but the mechanism is loaded to produce the same results. It is no wonder that various thinkers have postulated a *Deus* to set it up and start it going, but unfortunately, as we have seen, such a *Deus* would need another *Deus* behind it or would itself be the result of an orthogenetic process, so that we should be once more back where we started. We have here a philosophical merry-go-round.

I think the situation is this. Whatever the explanation, we are here. We have arrived at our regulations and behaviors and customs and cultures. If the hypothesis of natural selection had never been conceived, or if it were for some reason impossible, we should have to choose between a designer and an orthogenetic world. Each explanation would have little likelihood, since each supposes such an improbable cause. But the antecedently improbable sometimes takes place even though improbable, and we should have to choose between an actual designer and a potential design. In that case we should choose the latter, since the world is more parsimonious than *Deus* together with the world.

III. *Variation and Selection.* Fortunately we have another hypothesis in the field, that of variation and selection. This explanation may take several forms. The Lamarckian hypothesis is quite generally discredited. The biological evidence seems to favor mutations rather than fluctuating variations. These variations take place in many directions. It is natural selection which weeds out the unfavorable and many indifferent ones, permitting the favorable variations, probably relatively few, to survive. Whether all variations that are selected are mutations or not, whether all or most mutations are due to short light-waves or not, whether some variations are due to sexual mixture, whether some mutations are due to direct chemical effect, what part the environment takes in producing variations—these are questions for the biologist and are not in my province. There are doubtless many unknown factors in evolution, but the simple truth remains that in selection we have an explanation of the prevalence of adaptations, an explanation by factors that we know are actually at work (Morgan and Muller have established this), and an explanation far

more probable than the design and orthogenetic hypotheses previously considered. And further, this explanation may be carried up into psychological phenomena (as it was by James) and social phenomena as well.

In conclusion, I am not much impressed by the orthogenetic argument implied in L. J. Henderson's *Fitness of the Environment*. Carbon, hydrogen and oxygen are necessary to life, but they are only three of the ninety-two elements that appeared through a physical arrangement of electrons and protons. The general physical conditions of our earth seem to be due to a happy variation in what Chauncey Wright called "cosmical weather". On the tidal hypothesis of the origin of solar systems, Jeans calculated that only one in a hundred thousand of the stars in our star-cluster would ever give birth to planets, and if we take the entire galaxy the chance would be smaller. Very likely not all the solar systems would contain planets where the conditions are sufficiently favorable to allow life. And only on one, or at most two, of our hundreds of planets and planetoids life seems to be possible. If, as seems probable, the tidal theory is to be replaced by the collision-theory, life is still more rare. All this seems to a great extent to break down the force of Henderson's argument.

IV. *Mechanism and Emergence.* Whether the theory of selection would work better on an emergence-hypothesis than on a mechanistic I am not prepared to say. On the biological field we have at present a drawn battle over the evidence. The methodological advantage of mechanism in biology (this advantage is doubted by J. S. Haldane) is only a matter of convenience and carries with it no objective probability. In mind and consciousness mechanism breaks down. *Prima facie,* living things seem to be more than mechanisms, and since mind is more than mechanism I am inclined to think that life is also. But this is only a presumption, and I would not press the point. But this I wish to emphasize: if the theory of variation and selection needs the concept of emergence for its success there is no veto in logic. That hoary old pseudo-axiom of Aristotle and the Scholastics that the causal stream cannot rise higher than its source belongs to the pathology of human thought.

The hypothesis of variation and selection may itself take two

very different forms. In one, the variations are determined (Darwin's accidental variations were determined by unknown causes); in the other, some of the variations might be chance variations in the sense that they are not determined at all. These variations are subject to no logical veto if they are needed for a complete explanation. This brings me to the subject of chance.

Part III. Chance and Cosmogony

I suppose chance in its widest signification means absence of precise determination. I shall at once proceed to classify its most important species. They are (I) the contingent, as opposed to the necessary or the logically determined, and (II) the uncaused, as opposed to the causally determined. Each of these has subdivisions, and I propose the following classification:

I. Contingency—absence of determination by logical reasons.
   1. Simple contingency, (*a*) static and (*b*) kinetic.
   2. Collocative contingency, or, for short, collocation, (*a*) static and (*b*) kinetic or coincidence.

II. Indeterminism—absence of determination by efficient causes.
   1. Initial indeterminism.
   2. Subsequent indeterminism.

To these may be added what, for the want of a better name, I may call—

III. Casualty—absence of determination by final causes.

This has been discussed.

The absence of strict determination in Probable Reasoning is really an aspect of the contingency of the world. It is similar to collocation although it runs lengthwise as well as crosswise. The conclusion of an inductive argument lies somewhere beyond the data in another section of the world. The whole of probability is a doctrine of chances, tempered, however, by a partial uniformity.

I. *Simple Contingency.* The fundamental thing concerning simple contingency is that everything is contingent. Lotze once said that there are four questions which we cannot answer. "Why there is a world at all, when it is thinkable that there should be none? Why, as there is a world, its content is *M* and not some

other drawn from the far-reaching domain of the non-*M*? Given the real world as *M*, why is it not in rest, but in motion? Given motion, why is it motion in the direction *X* and not in the equally thinkable direction *Z*?"[7]

Lotze called these "perverted questions" and said, "To all these questions there is only one answer. It is not the business of the metaphysician to make reality but to recognize it; to investigate the inward order of what is given, not to deduce the given from what is not given." These questions, however, are not "perverted". The answer to all of them is: there is no "why". For there is no necessary being (perhaps Lotze meant that, but then his meaning was not well expressed). The view of Locke and Hume that the propositions of logic and mathematics are all analytic has been abundantly confirmed by recent logicians, notably Wittgenstein. These propositions all follow from the definitions, and what is defined may either exist or not exist. Ambitious attempts to prove the contrary were made by Hegel, but his attempt to show that not-being implies being and that being implies the Absolute Idea is fallacious. Bradley's doctrine of internal relations was completely shattered by G. E. Moore.[8] Instead of Leibniz' famous dictum, we may say that everything happens without a sufficient reason. This is not irrational—it is the conclusion of reason.

Not only is this true of beings generally, but it is also true of their changes. That *A* changes to *B* and not to *C* is a fact. There is no why. It is its nature so to change. Recently I heard a group of scientists express their dissatisfaction at our not being able to explain the ultimate customs of nature. They had not learned Hume's lesson, which is not that we are unable to explain, but that there is no explanation. This applies to the topographical changes in physics and, *a fortiori*, to qualitative change, which cannot be explained by topographical change. Myerson's quest for identity is like the hunting of the Jabberwock. Even Eddington recently fell into this trap when he regarded relativity as identity. The pure mathematics of it is certainly an identity. That the mathematical scheme would apply to our world is contingent.

[7] *Metaphysic*, Vol. 1, pp. 195 ff.

[8] "External and Internal Relations" (in *Philosophical Studies*).

That any relativity should hold (determined by the Michelson experiment); that there should be four dimensions, including time; that we should verify four equations as meaning the conservation of momentum in three dimensions and the conservation of energy (this Eddington admits); and that Einstein's gravitational formula should hold (as determined by its three verifications)—these are the things that bring it down to earth.

II. *Collocation.* Collocation is the independent variety of the universe. It is contingency in a cut across the stream of time. If *A, B,* and *C* are coexistent, and if they are not due to a single cause, they make a collocation. It is, of course, an instance of contingency. *A* is contingent, and *B* is contingent, and *C* is contingent; but *A*-with-*B*-with-*C* is also contingent, and this is a collocation. It would be pertinent to add, however, that although we have here an instance of contingency it also partakes of the nature of indeterminism. For the determinism of causality runs longitudinally down the stream of time, and there is no determinism across.

When an event is caused jointly by two members of a collocation we may call it a coincidence, and it also may be correctly said to be due to chance. Let us consider the classical example: the wind blows a tile from a roof and it kills a man in the street. The death is completely determined as the result of three causal events, *M, T, W*. These three make a collocation. This collocation is in turn determined by a preceding collocation, *M', T', W'*; and this by a previous collocation, until either we reach the original collocation (if time had a beginning) or we regress through an infinite series of collocations. But in either case we never get beyond a contingent variety or beyond a section of the universe with no determination across (you will remember that in the definition I assumed that we do not carry a collocation back to a single cause). The plain man is right when he ascribes the event to chance. It was this variety of the universe which so impressed Charles Peirce and which he stressed as an important part of his Tychism.

There is, however, a very important limitation to this independent variety, and this is a point so weighty that it is impossible to exaggerate its importance. It concerns the similarity of the elements of which the world is composed, the repetition of protons

and electrons and photons in a cross-section of the universe. The improbability of this repetition in the original independent variety of the universe is enormous. That one electron should have come into existence is a contingency, but the chance against its being repeated by causally independent contingencies for all the electrons is so overwhelming as to make it unbelievable. The evidence is similar to that of the biologists when they construct their family trees. To be sure, we are not acquainted with the generation of electrons as we are with the generation of tigers, and there are presumably more points of resemblance in tigers, but this is more than compensated for by the enormous number of electrons concerned. If we represent the chance of one electron as $1/n$, then the chance of the independent variety of all the electrons is $1/n$ to the power of the number of electrons in space-time. There are various possibilities of explanation and all must be species of the causal ancestral relation. Let me mention two.

First, we may suppose an original wave (if matter is composed of waves) or an original electron-proton, or photon-particle, or, possibly, an original of both; and that all other instances were derived directly or indirectly from the original. The primitive photon or what-not would either, first, generate another photon without going out of existence itself, or it might divide as an amœba divides. I shall call this hypothesis the generation-hypothesis and the primitive cause a generator.

Or second, we may suppose some sort of mechanism or producer, at present unknown, but different from the electricity or light which it produces. This hypothesis I shall call the moulding-hypothesis, and the first cause a moulder.[9] If matter is composed of waves, Poseidon may be our God. If, as seems more likely, the waves are waves of probability only, then Zeus or Apollo will be the primordial deity.

Considerations such as these have been supposed to lie beyond the ken of the physicist, but I venture to believe that physicists must ultimately, and perhaps soon, deal with problems of genesis as the biologists have done before them. I know of no empirical evidence in favor of the first hypothesis. As to the second, I can

[9] Charles Peirce mentions another hypothesis in *Principles of Philosophy*, p. 226.

think of two conjectures, one already made. Jeans had trouble in explaining the arms of the spiral nebulæ, and he offered this suggestion: "the type of conjecture which presents itself, somewhat insistently, is that the centres of the nebulæ are of the nature of 'singular points', at which matter is poured into our universe from some other, and entirely extraneous, spatial dimension, so that, to a denizen of our universe, they appear as points at which matter is being continually created."[10] On which I would comment that this conjecture would only push the problem farther back without giving any solution. The other conjecture is that the moulder, whatever it may be, may still be at work, and if Millikan is right in believing that the cosmic rays are due to the formation of elements in the depths of space, the electrons and protons of which the new elements are composed might be due to it.

All this, obviously, is highly speculative. A common causal ancestry, however, is not speculative, but has the highest degree of probability. This, as I pointed out before, limits the independent variety of Charles Peirce. Some variety there may well be.

III. *Initial Indeterminism.* The world and time either had a beginning or had not. The notion of a beginning is a possible one and carries with it no difficulties in logic or in scientific method. If the world had no beginning, and there were no indeterminism in its entire course, each particular event would be caused. And since all the events are only the aggregate of the particular events, all the events would be caused. Nevertheless, the entire infinite chain is contingent, causality and all. The world might just as well, as far as logic is concerned, have been changeless. That also would have been no less and no more contingent. Such a world is called eternal in the sense that it is timeless. Instead, however, of its being the subject of adoration, as it was to St. Augustine, it would be a relatively poverty-stricken affair, since it would lack all that accrues with time and change. It would be like a static cross-section of our time-stream. Let us call such a timeless being *A*. *A* is contingent and its staticity is contingent. But it would also be contingent if *A* should give rise to *B*. But if *A* leads to *B*, then *A* is the beginning of time, or at least, of a time. Such a change,

[10] *Astronomy and Cosmogony*, p. 352.

with such a beginning of time, is just as rational as a mere *A*. It is simply its nature to lead to *B*. It is obviously absurd to think of an empty time prior to *A*. *A* does not come out of nothing. It does not come at all. It does not become. It is *B* that becomes. It is also possible that *A* should remain with *B*. In this case *A* may be said to endure. And then if *AB* should give rise to *C*, *A* might still endure; and so on, in which case *A* would acquire a sort of Eternity, or rather Duration, which is more than Eternity. It is similar to the *Aevum* of Aquinas. A beginning, then, of time, and of the world in time, is an entirely possible view.

Is there any empirical evidence in favor of such an initial indeterminism? There are three points that I wish to mention.

First, the hypothesis of a beginning is more parsimonious. Occam's razor cuts here as well as elsewhere. The burden of proof is on anyone who asserts the existence of an infinite series, unless it has some use in explanation.

Second, Kant mentioned a difficulty in the thesis of his first antinomy. Let me put it in my own way—if there is in existence a clock which had no beginning and which ticks once every second, it has already ticked in succession an infinite number of times. This is supposed to be impossible. There are three points that I wish to make in reference to this. First, although no so-called existence-theorem of the infinite has been established, nevertheless no contradiction has so far appeared in it. It may be possible. But Kant's thesis deals with an infinite in succession. Second, Zeno's argument, if applied to time, is unanswerable. If the tortoise were stationary, a continuous or a compact time could be so divided that Achilles could never reach the end of his journey. He would have to traverse an infinite series, corresponding to the numbers 1, 2, 3, et cetera, and an infinite can never be reached in this way. It is logically certain, in my opinion, that time is discrete. Third, Kant's argument is quite different from Zeno's because in his case the race was never begun; or, in my example, there was no first tick of the clock. I am very much puzzled over the whole matter, but I cannot see clearly that such a series is impossible. This second argument does show us, however, the enormity of what we can cut away with the razor if we assume the beginning of time.

Third, we also have some well-known empirical considerations that have a bearing on the situation.

The first is based on the principle of entropy. Let us suppose that matter is no longer being generated or made. This is the usual supposition. Then, if the principle of entropy is true and matter, as seems probable, is finite, the world, or at any rate the present epoch (as Whitehead calls it), must have had a beginning or it would have run down long ago, yes, an infinite time ago. If, however, the generation or production of matter is still going on, then since the world is finite, such production or generation has presumably continued for a finite time only, since otherwise an infinite amount of matter would have been made. The weakness of this argument is, of course, the present uncertainty as to the universal nature of the principle of entropy.

The second consideration is the recent discovery that we live in a continually expanding universe, in which case it seems probable, though perhaps not certain, that our epoch had a beginning.

To summarize the entire discussion of initial indeterminism we may say, first, that it is possible; secondly, there is no evidence against it; third, it is more parsimonious than the notion of a beginningless world; and fourth, it is supported by the empirical evidence that we possess.

IV. *Subsequent Indeterminism.* It should now be clear that there can be no logical objection to partial indeterminism in the world as it runs its course. Since indeterminism is possible in an absolute beginning there is no reason why we should not have subsequent indeterminism. As a collocation is crosswise chance, so indeterminism is longitudinal chance. So much for its possibility. Are there any reasons for its probability? I shall consider four lines of evidence.

First, it has long been recognized that all laws may be statistical; Poincaré emphasized this. The principle of entropy, in particular, is such a statistical affair.

Second, it is probable that every individual entity in the Universe is to some extent unique. I cannot take the time to enter upon an extended discussion of the principle of individuation, which would involve the status of universals and particulars, but I must say at least this: entities are differentiated by either content

or context or prime matter. Prime matter we have already excluded by the principle of irrelevance. Now two particulars within an inclusive individual may be differentiated by context. In a pluralistic or concatenistic universe, however, two non-overlapping individuals cannot be differentiated in this way. They must be differentiated by content, like the angels of St. Thomas Aquinas. If, for example, the third and the ninth links of a concatenation were not different in content they would be the same link, and the chain from the third to the ninth links would be closed. Each individual is unique. Of course, if mechanism is true, this uniqueness would not count in the causal stream; it would be epiphenomenal to the elements of which it is composed. There is, however, no reason to believe in this classical mechanism with its principle of the resultant, and there is much reason to disbelieve in it, though I shall not enter upon a discussion. Even Russell, recently, following Dirac, seems to have abandoned it. To quote: "It must be said, however, that there is no reason, a priori, to suppose that the effect of two causes, acting simultaneously, will be calculable from the effects which they have severally; and in the most modern physics, this principle is found to have less truth than was formerly supposed." [11]

It might be said that this argument would not prove the absence of causality but only of strict predictability; we could still always say that if, *per impossibile,* the unique were repeated, it would have the same result. But I do not know how we could prove such a proposition, since it has no empirical meaning. In accord with our original definition of cause, we should have indeterminism.

Third, Heisenberg's principle of uncertainty is here the all-important piece of evidence, and at last we seem to have an empirical verification of the Tychism of Charles Peirce. The evidence, however, needs to be handled with great care. First, it should be perfectly clear that Heisenberg has not proved indeterminism. What he has shown is an unpredictability, an indeterminism in our formulas, although extrapolation still applies to these formulas. Second, Bridgman has made it clear that the difficulty is not merely in the act of observation. To quote: "The essential fact is not that the act of observation interferes with the

[11] Bertrand Russell, *The Scientific Outlook,* pp. 69 ff.

motion; if this were the only effect we could allow for the amount of interference by calculation. The essential fact is that the act of observation interferes with the motion by an unpredictable and incalculable amount. The fact that the amount of interference is unpredictable is an integral part of the theory." [12] And Einstein, Tolman, and Podolsky have shown in an article in the PHYSICAL REVIEW [13] that "the principles of the quantum mechanics must involve an uncertainty in the description of past events which is analogous to the uncertainty in the prediction of future events". Third, this unpredictability seems to be necessarily inherent in physics as at present constituted. Fourth, whether or not it can be surmounted in a reconstructed physics is a matter of presumption. Probably most physicists, including Heisenberg, believe that it cannot; Planck [14] thinks it can; Einstein is hopeful; we do not know. I will, however, as a philosopher, make a present to Planck of Zeno's principle of the discreteness of time. I have no doubt that eventually the physicists will do something about this, just as Einstein removed the notion of the relativity of space and time from the status of a mere abstract acknowledgment to experimental physics. Zeno's principle is like relativity before Mach; it is not generally accepted even by philosophers. With the discreteness of time will probably come the discreteness of space-time, and physics will be written in equations of finite difference. Where this will leave the principle of uncertainty no one knows. The present situation seems to be as follows:

First, we do not know whether nature after its beginning (if it had a beginning) consists, at bottom, of chance events, or whether the events are strictly determined. This was brought out by Dunsany in the quotation at the beginning of this address, and I may add that he was right in having "Fate and Chance cast lots as to whose the Game should be", because whether it is determinism or indeterminism is itself the Chance of an all-enveloping contingency.

Second, we can verify at the present time only indeterminism and probability. The relative positions of chance and determinism

[12] *Science*, Vol. 73, pp. 544 ff.

[13] Copied in THE SCIENTIFIC MONTHLY, 1931, pp. 477 ff.

[14] *The Universe in the Light of Modern Physics.*

have reversed themselves during the last few years. Five years ago we wrote our physics in a deterministic form. An ultimate indeterminism was possible but it was superfluous. Now we write our physics with statistical laws and determinism is at present irrelevant. Indeterminism at present has the advantage. Is Russell's love for the faery of determinism a last survival of some early religious bias?

The fourth line of evidence: Indeterminism gives a possible explanation of the variety of the universe. This was one of the two main arguments of Charles Peirce. It is probable that the ancestral being or beings of our universe contained relatively little variety. If so, there are just two alternatives—either all the complications of the present universe were strictly caused by a relatively simple being or beings, or chance variations have contributed to the variety. I have previously shown that the uniformity of the elements of the world—electrons, protons, photons, and what-not—can only be accounted for by ancestral causal relations. Consequently, Peirce's explanation, in my opinion, has limitations. It is, however, at least plausible that the variety which is due to chance was not given altogether at one dose (to use Peirce's term) at the beginning, but that it is distributed through time. Putting these four points together we have a very impressive argument for what I called Subsequent Indeterminism.

Since Subsequent Indeterminism is the essential feature of the Tychism of Charles Peirce, this is perhaps the place to state my disagreements with him. In his article "The Doctrine of Necessity Examined",[15] Peirce gives five arguments in favor of indeterminism. The fifth he does not divulge in detail. His fourth, that we could not have a deterministic origin of mind, was due to his identification of mechanism with determinism. This, however, is a mistake, and the emergence-theory contains an answer. The first two arguments are practically the same. Together, they make his first main one—the argument from variety. His third is his second main one, his explanation of law and uniformity.

Peirce's first main argument, the one concerning variety, has been already discussed. It has some validity, but it is limited.

[15] *Chance, Love, and Logic*, pp. 195–199.

His second leading argument deals with causality. It contains the most novel features of his theory. Starting with an initial mind, he regarded the laws of nature as habits that had been formed by the process of trial and error—he dealt with this process in a somewhat Lamarckian way, and he presupposed a fundamental tendency that there should be laws. I am not able to follow him in this for these reasons. First, I see no evidence for an initial idealism, or, indeed, for the presence of minds apart from animal organisms. Second, the process of habit-formation by trial and error also, so far as we know, exists only in connection with finite living things. Third, Lamarckism in the present state of our evidence is improbable. Fourth, a tendency to produce laws is not a valid explanation. In general, I do not see that indeterminism will help us to explain laws, except in a limited way which I shall consider in the next section.

V. *Chance and Selection.* So far as I can see, variation and selection are of value as an explanatory principle for adaptations only. There are certain fundamental adaptations in the inorganic world which I wish to consider.

1. Let us suppose that there is in existence a purely static being, *S*. It cannot give rise to our known universe because it gives rise to nothing. It is a variation which, to use James' expression, "flocks all alone". It has nothing to do with us.

2. Let us suppose that there is a kinetic being, *K*, which changes for a while and then stops, without having given rise to anything else. This also would wing it all alone; it is no concern of ours.

3. Let us further suppose that there is a kinetic being, *L*, which changes through a short series back to itself. This also is sterile for us.

4. If there is a kinetic being, *M*, which remains simple, giving rise by causality or chance to little or no variety, this again is a variation, if we may speak of it as such, which is not germane to our world. Only a contingent and kinetic being, giving rise to progressive and varied events, could be the parent of our universe. Such a being survives in its offspring.

5. There may have been various beings in our universe which had, contingently, certain habits of change, or laws, and these laws were such that their possessors could not survive in the environ-

ment of the remainder of the universe. The laws would have been lethal and their possessors would have ceased to be. Only those beings could survive that had habits adapted to the environment in which they existed. So far, natural selection may have operated. In this case not law, but laws, were selected. In some such limited way as this Peirce's hypothesis may be true.[16]

The origin of our solar system by a clip given the sun by a passing star—a most important variation for good or ill—and the subsequent emergence of living beings and of conscious beings, have been considered sufficiently for the purposes of this paper. One thing more. Sometime in the past a self emerged, a central unity in a limited section, not of space only, but of space-time. I cannot enter upon a discussion of the Humian and Buddhistic denial of personal identity. I will merely say that one should endure the strain of believing in his own existence unless he is prepared to accept the consequences which Buddha drew from the denial of it—namely, that all prudent thought for the morrow is silly, since one will wake up on the morrow only in a Pickwickian sense. To develop this would require an entire paper.

The most important contingent event which has ever taken place on our earth was that which established the connection between the will and happiness. This connection is empirically fourfold, whatever may be its ultimate root. The realization of a desire is pleasant, its obstruction unpleasant; an unpleasure leads to a desire to annul it, and a pleasure leads to a desire to retain it and repeat it. This relation between desire and hedonic tone does not follow by necessity. So far as logic is concerned pleasure and unpleasure might have been interchanged. To a voluntarist such a substitution would not matter, since for him the good means the realization of desire. But to a hedonist, *i.e.* to a real human being, it matters tremendously. We can conceive no more perverse place than one where sentient beings are hell-bent toward their own misery. Fortunate as our situation is in this respect, it would be of no utility to attempt to explain it by a *Deus* from the outside, since the same Will to Happiness in him would be again only a fortunate contingency.

[16] Peirce suggests the hypothesis that space may have come into existence in this way (in *Principles of Philosophy*, pp. 225 ff.). This volume was received too late to be considered in this paper.

VI. *Theological Scientists.* There are certain scientists who have recently expressed views opposed to the theses of this address. I shall consider some of these opinions briefly.

To Millikan's benevolence of nature [17] we may oppose the accidental birth of our planet and all the manifold ills and miseries of human life. To his benevolence of science [17] we may oppose Parrington's biting phrase, " science become the drab and slut of war and industrialism ".[18]

Jeans' argument for God as a mathematician consists solely in this—that all we know of the external world is its mathematical properties. Of course, this is not true. Our world has an empirical topography, and mathematics applies to many other possible worlds besides our own. Further, neither our world nor any other world could violate the laws of logic and mathematics, because to do so would involve a contradiction. Neither God nor devil nor matter nor abracadabra could make a contradictory thing be true. I might add, however, that it looks as though Jeans' God has a special taste for the mathematics of chance and probability, and it would be little comfort to me if I thought that a superhuman Dr. Lenzen were guiding my life in order to exemplify certain statistical probabilities. We may, however, imagine a pious poet in the future singing: " For if He thunder by chance, the thunder is still His voice."

I agree with C. G. Darwin [19] that the attempt (which is made by Eddington) to apply the principle of uncertainty to the human will is not successful. The variations due to chance in the gross behavior of the body, with which consciousness is presumably correlated, are insignificant. What most believers in the free will of indeterminism desire is an absolute desert of reward or punishment, based upon an absolute merit or demerit, which again are based upon absolute responsibility. But neither determinism nor chance can give us these; they are pseudoconcepts. What we do need is a large measure of control over our own conduct and some control over the world. And this we have. I must confess to a very strong æsthetic or dramatic preference for some indeter-

[17] *Evolution in Science and Religion.*

[18] *Main Currents in American Thought,* Vol. 3, p. 85.

[19] *The New Conceptions of Matter,* pp. 118 ff.

minism of the will, but I do not believe that this preference has any bearing upon the facts. Nevertheless this much must be said for Eddington's position—the belief in what I have called a subsequent indeterminism in that aspect of nature which has hitherto seemed the chosen realm of determinism, undoubtedly strengthens the belief in indeterminism elsewhere. This, we remember, was the use which Epicurus made of chance.

The philosophical conclusions appended by Eddington to his marvelous description of *The Nature of the Physical World,* so far as I can see, have no cogency. His reasoning seems to be this: we know nothing scientifically about the qualities of the external world, so why are they not conscious qualities? And why should not these conscious qualities be all included in a universal mind? But we have already shown that in the absence of deciding evidence realism is more probable than idealism and concatenism than monism. Eddington, in each case, takes the less probable alternative. Eddington's real motive, however, lies beyond rationalism. He is a mystic, and in mysticism he has touched the rival of rationalism and naturalism.

VII. *Mysticism.* It was William James who introduced the problem of mysticism into psychology and modern philosophy. What one at present believes about it seems mostly a matter of presumption. Delacroix, Leuba, and Coe are unfavorable; Maréchal, a Catholic, is favorable; James and Pratt are agnostic. We have as yet, so far as I know, no good study of comparative mysticism. It is necessary to study not only the trance-states of the Catholic mystics and the practice of the presence of God of the Quakers, but also the pantheism of the Vedānta and Mahayana Buddhism, the agnostic mysticism of early Buddhism and the atheistic mysticism of southern Buddhism and the Sāṁkhya. The differences in the philosophies of the mystics would seem, *prima facie,* to be due to non-mystical antecedents, but the mystic state remains an enigma.

I have developed in this paper a rationalism—chance is coldly rationalistic, that is to say in accordance with reason—and I have no presumption in favor of mysticism, but I recognize mysticism as the only rival that I can respect.

Many theologians and theologizing philosophers give us nothing but trumped-up 'proofs'—sophistries all. Others fall back on the Will to Believe. James gave, so far as I can see, a valid utilitarian argument for the exercise of faith in cases of what he called "momentous options", where there is no evidence, or an equality of evidence, on either side. But he neglected to show, first, that there are "momentous options", and secondly, that there is ever an equality of evidence. He failed to consider the strong improbability of an irrelevant hypothesis, following instead, I fear, some such principle as Lodge's principle of credulity. There is a third difficulty which James did discuss—the difficulty of the reflective man making himself believe when he knows there is no evidence for belief. Most of us, however, are unable to console ourselves by a belief which we adopt only for the sake of consolation.

Beside these two broken reeds there remains mysticism. I have already said that I have no presumption in favor of it. The interpretation of the mystical experience, if one believes in its objective validity, seems *prima facie,* to be influenced by the philosophy which one already has. May I, then, offer a speculative hypothesis without adding to it the attitude of acceptance? My hypothesis is: First, there is a moulder. Second, the moulder is, at least for us, a mysterious being. Third, the moulder has been continually at work since the beginning of time and is concatenated with many or all of the other links in the cosmic chain. Fourth, there is a realization, in the mystic state, of the presence of the moulder in the central self. Fifth, although previous discipline is necessary, the vision finally comes by chance. This last is testified to by all the mystics. It would be strange if His Majesty of St. Teresa were Zeus or if St. John of the Cross lay on the bosom of Poseidon.

CONCLUSION

Although I shall not burden you with a long summary, I trust that you will all acknowledge that this address has been about chance. Chance is not a *vera causa.* It is not an entity. It is the absence of determination. I have maintained that there are various kinds of chance. My theses are as follows:

1. The world is contingent, undetermined by necessity.

2. The probability is that it is undetermined by efficient causes, entirely at the beginning, and partially after the beginning.

3. The world as a whole is undetermined by final causes. In this sense, also, it is chance.

4. The method that we must use to explore the world is the method of probability, which is itself a doctrine of chances.

WILLIAM SAVERY

UNIVERSITY OF WASHINGTON

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL ASSOCIATION, 1931

FIFTH ANNUAL REPORT OF THE BOARD OF OFFICERS

To the Members:

The Revolving Fund for Publication

The financial statement appears below. The general editor of the Source Books in the History of the Sciences presents the following report:

During the past year, some progress has been made in the program for this series. Professor William F. Magie of Princeton University has been steadily at work on the manuscript for a *Source Book in Physics,* which he expects to complete late next spring or early summer; Professor R. A. Harper of Columbia University has been organizing a committee for a *Source Book in Botany;* and Professor Kirtley F. Mather of Harvard University has recently been secured to develop a *Source Book in Geology.* The two volumes already on the market have continued to sell well, so that nearly 1700 copies of Shapley and Howarth's *Source Book in Astronomy* have been disposed of and approximately 2000 copies of Smith's *Source Book in Mathematics.* It is hoped that still further advance will be made during the coming year.

Gregory D. Walcott, *General Editor*

Carus Lectures

The Board appointed Professor R. B. Perry to the place made vacant on the Committee on the Carus Lectures by the death of Professor A. C. Bennett. This appointment is until December 31, 1933.

The following resolution was accepted by the Board and approved by the Committee on the Carus Lectures and by Mrs. Carus.

Voted: that the Carus Lectures be considered an undertaking of the American Philosophical Association and be announced as given under the auspices of the Association; that, as parts of the Association, all Divisions be pledged to the support of the Carus Lectures; that Divisional meetings be planned as far as possible with the Carus Lectures in mind, although each Division remain free to schedule its own meetings; that any costs incidental to the announcement and delivery of these Lectures be paid from the funds of the Association; and that

the determination of the Carus Lecturer be left to the Committee on the Carus Lectures while the determination of the time and place at which the Lectures are to be delivered be left to the Board of Officers.

American Council of Learned Societies

Professors Woodbridge and Hammond, and the secretary, represented the Association at the thirteenth meeting of the American Council of Learned Societies, held in New York City, January 29–31, 1931. The Council made appropriations towards a compilation of Latin translations of Aristotle, and towards the documentary history of primitivism upon which Professors Lovejoy and Boas are working. There was also discussed the question of appropriations towards the publication of the Peirce manuscripts, and the feasibility of undertaking the publication of a glossary of Latin, Greek, Arabic, and Hebrew philosophical terms, a project suggested by the Eastern Division at its 1930 meeting. (It may be noted that the actual publication of the Peirce volumes by the Harvard University Press was accomplished without the aid of the Council). The secretaries discussed the survey of *The Publication of Books by Learned Societies* prepared by Mr. John Marshall of The Medieval Academy. Plans were laid for the issuance and distribution of a list of all books published by the constituent societies. The secretaries also considered the planning and organization of research by the constituent societies and the question of making more accessible the materials for research in the social sciences and in the humanities.

Results of Questionnaire

In the Spring of 1931 a questionnaire was sent to the members, following the policy of certain of the societies in the American Council of Learned Societies. Some results of this questionnaire, gathered from 132 replies, may be tabulated as follows (the percentages in each case are calculated in terms of the number who answered the question under consideration).

Do you believe any other philosophical journal is needed? No, 57%; yes, 35%; doubtful, 7%. Those replying in the affirmative felt that the main needs were journals giving more place to the history of philosophy, the philosophy of science, and technical articles on logic.

Would a yearly Philosophical Index, similar in plan to the Psychological Index, be useful to you? Yes, 68%; no, 21%; doubtful, 10%. 58% regarded it as probable that they would subscribe at a $4 figure; 31% as unlikely; and 11% were doubtful.

Do you believe that a series of monographs in philosophy would be desirable? Yes, 59%; no, 25%; doubtful, 16%; 36% will have material to submit; 40% will not; 24% are doubtful.

Have you any manuscripts, monograph or book size, for which you have not been able to find publishers? Yes, 24%; no, 76%.

Should the Association publish each spring a list of doctoral dissertations under way in this country? Yes, 72%; no, 22%; doubtful, 5%.

In regard to the conduct of meetings, 66% favored more discussion; 67% favored more symposia; while practically every member favored the distribution of abstracts before or at the meeting, about 82% desired to receive such abstracts *before* the meeting.

Concerning dominant fields of interests, 17% of the members stressed metaphysics; 16% ethics; 14% philosophy of religion; 14% history of philosophy; 9% logic; 7% epistemology; 6% philosophy of science; 5% æsthetics; 4% social philosophy; 4% psychology.

Would you favor the election of a small body of Fellows within the membership of the Association, such election serving as a recognition of distinguished philosophical achievement? Yes, 55%; no, 38%; doubtful, 7%.

Is it desirable for the Association through committees to organize and direct coöperative philosophical research? No, 43%; yes, 36%; doubtful, 20%. Replies to the question indicated the answers would vary considerably depending upon the kind of coöperation intended.

The Board of Officers thanks the members who took part in the questionnaire, and recommends the consideration of the above results, together with suggestions received but not here presented, by the succeeding Board of Officers.

BOARD OF OFFICERS FOR 1932

E. G. Spaulding (*Chairman*), A. P. Brogan, H. C. Brown, F. S. C. Northrop, E. T. Mitchell, H. G. Townsend, C. W. Morris (*Secretary*).

Respectfully submitted,

Board of Officers for 1931.
W. SAVERY, *Chairman*
A. N. WHITEHEAD
G. W. CUNNINGHAM
H. D. ROELOFS
F. S. C. NORTHROP
E. T. MITCHELL
C. W. MORRIS, *Secretary.*

Financial Statement

January 1, 1932
Houston, Texas

Board of Officers,
American Philosophical Association,
Dr. Charles W. Morris, *Secretary-Treasurer,*
Chicago, Illinois.

Gentlemen:

In compliance with your written instructions of December 12, 1931, we have examined the records of the American Philosophical Association, Chicago, Illinois, for the period of January 1, 1931, to December 31, 1931, and submit herewith the statements of cash receipts and disbursements of the General Treasury, Revolving Fund for Publication, and Fund for the Eighth Congress of Philosophy.

We have verified the balances of cash on hand by personal examination of the depository records at the South Texas Commercial National Bank, Houston, Texas, have examined all cancelled checks and authorizations for disbursements, and find them to be in accordance with the requirements of your Association. The cash receipts were found to be in agreement with the remittance advices in the files of your Secretary.

We certify that, based upon the records kept and examined, the following statements of cash receipts and disbursements of the General Treasury, Revolving Fund, and Fund for the Eighth Congress of Philosophy of the American Philosophical Association, are true and correct and represent the true cash position of the Association at the close of business December 31, 1931.

Very truly yours,

Reece-Evans Audit Company

American Philosophical Association

Cash Statement, General Treasury, for the Year Ended December 31, 1931

Balance—January 1, 1931 (South Texas Commercial National Bank, Houston, Texas)		$ 313.63
Receipts:		
Dues of American Council of Learned Societies—		
Eastern Division	$ 15.34	
Pacific Division	2.72	
Western Division	6.94	$ 25.00

For General Treasury			
Eastern Division	$ 86.25		
Pacific Division	15.25		
Western Division	39.00	$140.50	
For Printing Annual Report			
Eastern Division	$104.19		
Pacific Division	18.46		
Western Division	47.11	$169.76	
Total Receipts			335.26
Total			$ 648.89
Disbursements:			
Dues to American Council of Learned Societies		$ 25.00	
Expenses toward Carus Lectures		57.04	
Printing the Annual Report		169.90	
Stenographic Services		38.50	
Stationery		11.25	
Printing		12.40	
Stamps		25.00	
Total Disbursements			$ 339.09
Balance—December 31, 1931 (South Texas Commercial National Bank, Houston, Texas)			$ 309.80

Cash Statement, Revolving Fund for Publication, for the Year Ended December 31, 1931

Balance—January 1, 1931 (South Texas Commercial National Bank, Houston, Texas)			$9,422.17
Receipts:			
Interest:			
Checking Account Deposits:			
January 1, to May 29, 1931	$102.45		
May 29th, 1931, to December 31, 1931	42.02	$144.47	
Savings Account Deposits:			
May 29, 1931, to July 1, 1931	$ 15.83		
July 1, 1931, to December 31, 1931	91.19	$107.02	
Royalties (McGraw-Hill Book Company)		269.60	
Total Receipts			521.09
Total			$9,943.26

Disbursements:		
Advances:		
Source Book in Physics (Professor William F. Magie)	$109.00	
Total Disbursements		109.00
Balance—December 31, 1931 (South Texas Commercial National Bank, Houston, Texas)		$9,834.26

Cash Statement, Fund for the Eighth Congress of Philosophy, for the Year Ended December 31, 1931

Balance—Received from John J. Coss		$ 411.47
Receipts:		
Interest on Bank Deposits:		
February 3, 1931, to July 1, 1931	$ 6.88	
July 1, 1931, to December 31, 1931	6.68	$ 13.56
Royalties (Longman's Green and Company)	33.84	
Total Receipts		$ 47.40
Total		$ 458.87
Disbursements:		
Total Disbursements		NONE
Balance—December 31, 1931 (South Texas Commercial National Bank, Houston, Texas)		$ 458.87

WESTERN DIVISION

President: A. P. BROGAN
Vice-President: M. T. MCCLURE
Secretary-Treasurer: E. T. MITCHELL
Executive Committee: The foregoing officers and A. C. BENJAMIN, E. A. BURTT, J. H. FARLEY, and C. B. VIBBERT

The thirty-second annual meeting of the Western Division of the American Philosophical Association was held at the University of California, in connection with the meeting of the Pacific Division and with the general meeting of the Association for the reception of the third series of the Carus Lectures, delivered by Professor George H. Mead. The three lectures by Professor Mead were entitled The Present as the Locus of Reality, The Social Nature of the Present, The Implications of the Self. The series bore the general title, *The Philosophy of the Present.*

The following additional papers by members of the Division appeared on the program:

On the Nature of Causality.....E. T. MITCHELL
Thought and Experience.....HERMAN HAUSHEER
The Synoptic Theory of Truth.....W. SAVERY
Presidential Address: On the Second Copernican Revolution
G. WATTS CUNNINGHAM

The secretary presented to the members the archives and minute-book containing the results of his attempt to gather in permanent form the records of the Division.

The secretary was requested to ascertain the preferences of the members on the question whether the annual meetings be held during the Christmas holidays or during Eastertide.

Voted: That the determination of the time and place of the next meeting be left to a committee composed of the president, vice-president, and secretary.

The following resolution was adopted, a copy of which was voted to be sent to Mrs. Maurice Picard:

> The Western Division wishes to express its deep sorrow at the death of Professor Addison W. Moore on August 25, 1930. President of the Division in 1911, always an active participant in its progress, Professor Moore was held in high esteem by his fellow members. He was respected for the acuteness and vigor of his intellect, and loved for the kindliness and geniality of his personality. That he will be with us no more is a source of deep sorrow; that he spent so much time in our midst and shared himself so unreservedly with us remains a cherished memory.

The following new members were elected: PHILIP D. JORDAN, FRED W. KROENCKE, JAMES C. MANRY, C. B. PYLE.

A unanimous vote of thanks was extended to the University of California and to the Department of Philosophy for the excellent accommodations and generous hospitality which contributed so much to the high success of the meeting.

Treasurer's Report

Balance—January 1, 1930		$375.67
Receipts		
Interest	$ 14.24	
Dues	277.10	
Total		291.34
Total		$667.01

Disbursements

Stamps	$ 17.00	
Minute-Book and Paper	13.30	
Stationery	17.50	
Express, supplies, and telegrams	10.16	
Exchange	4.15	
Typing	56.50	
1929 Meeting	28.54	
General treasury	93.74	
Incidentals	5.12	
Total		246.01
Balance—January 1, 1931		$421.00

CHARLES W. MORRIS, *Secretary-Treasurer*

EASTERN DIVISION

President: E. G. SPAULDING
Vice-President: GRACE ANDRUS DE LAGUNA
Secretary-Treasurer: F. S. C. NORTHROP
Executive Committee: C. J. DUCASSE (1932); H. W. SCHNEIDER (1932), G. W. CUNNINGHAM (1933), STERLING P. LAMPRECHT (1933), H. T. COSTELLO (1934), H. B. SMITH (1934), A. N. WHITEHEAD *ex officio* for one year

The thirty-first annual meeting was held at Yale University, New Haven, Connecticut, December 27–29, 1931. The following program was presented:

Centenary Session on Hegel

Contemporary Significance of Hegelian Philosophy. SIDNEY HOOK
Hegel's Rationalism. MORRIS COHEN
Hegel's Political Philosophy. GEORGE H. SABINE
The Viciousness of the Subject-Predicate Relation. SARAH H. BROWN
Reflexive Relations. DEWITT H. PARKER
The Philosophical Theory of Classes. PAUL WEISS
Inadequacy of the Hedonistic Interpretation of Pessimism. CORNELIUS KRUSÉ
Significance. A. A. ROBACK
A "Desire" Theory of Value. HOMER DUBS
Theory of Value and the Philosophy of Mind. W. M. URBAN
Objective Relativism Reconsidered. ARTHUR E. MURPHY
Fact and Event. A. USHENKO
Substances, Events, and Facts. L. SUSAN STEBBING

Some Aspects of the Problem of Meaning ..... C. M. WHITE
Meaning and the Possibility of Verification ..... GEORGE BOAS
Demonstration and Inference in Philosophy ..... A. E. BLUMBERG
Is there Logical Force in Demonstration? ..... MARIE C. SWABEY
Circularity in Greek Philosophy ..... M. T. MCCLURE
A Neglected Main Source in Plato's Thought .... ROBERT L. CALHOUN
The Psychology and Metaphysics of Ockham ..... T. B. BIRCH
Mr. Clark's New Evolution in the Light of Leibnizian Metaphysics
ADAM ALLES
Primitive Mental Attitude and the Objective Method in the Study of Mind ..... BRUCE W. BROTHERSTON
Some Metaphysical Implications of the Pragmatic Theory of Knowledge ..... THEODORE T. LAFFERTY
Wilhelm Dilthey and the *Geisteswissenschaften* ..... GEORGE MORGAN
The Theory of Truth ..... S. KERBY-MILLER
Frequency Theory of Probability ..... ERNEST NAGEL
Probability, Determinism and Science ..... BENJAMIN GINZBURG
Probability and Causality in Quantum Physics ..... HENRY MARGENAU
Presidential Address: Subjects and Objects ..... A. N. WHITEHEAD

The business meeting was called to order at 5:00 p.m., Tuesday, December 29th, with Vice-President Balz in the chair. The minutes of the thirtieth annual meeting were approved as printed.

Treasurer's Report

Receipts		
Balance brought forward	$1,649.87	
Membership dues	614.30	
Interest	4.88	
Total		$2,269.05
Expenditures		
Dues to National Association	$ 86.25	
Dues to Council of Learned Societies	15.34	
Printing of Annual Report	104.19	
Expenses 1930 Annual Meeting	35.30	
Stencils and mimeographing	30.05	
Printing, stamped envelopes, postage, etc.	91.39	
Secretarial assistance, mailing	36.51	
Loss on Canadian Exchange	.38	
Total		$ 399.41
Balance on hand		$1,869.64

Audited and found correct { C. J. DUCASSE / C. W. HENDEL

Professor C. J. Ducasse reported for the committee appointed at the thirtieth annual meeting to inquire into the feasibility of a bibliography of philosophical books and articles, continuing to date the work of Dr. Benjamin Rand.

The following recommendations of the Executive Committee were presented to the meeting and approved: (1) That the Eastern Division approve the suggestion of the national Board that the Carus lectures be held at Chicago in September, 1933.* (2) That the Eastern Division recommend to the national Board that a permanent national committee of three members, one from each Division of the Association, be appointed to continue the work of the committee on the bibliography of philosophical books and articles. (3) That this committee report annually from the board to the separate Divisions. (4) That Professor C. J. Ducasse represent the Eastern Division on this committee. (5) That Professor C. J. Ducasse be empowered to reply to the request of the American Council of Learned Societies with reference to possible research in philosophy, and that he urge the said Council to support the publication of a bibliography of philosophical books and articles, continuing to date the work of Dr. Benjamin Rand.

The Executive Committee called the attention of the Eastern Division to the following instructions for the guidannce of future program-committees of the Division: The program-committee is hereby instructed to select papers with the following considerations in mind: (1) Scholarly statement from the standpoint of accuracy and originality, (2) Length not exceeding two thousand words, (3) Form, style and manner of treatment suitable for presentation to, and discussion by, members of the Division. Upon the motion of Professor H. B. Smith the Division instructed the incoming president to appoint a committee of three members to provide a means of bringing together prospective vacancies and candidates for positions in philosophy.

The Nominating Committee (W. H. Sheldon, Chairman, W. P. Montague and W. M. Urban) presented the following nominations, for which the secretary was instructed to cast a unanimous vote: For President, E. G. Spaulding; for Vice-President, Grace Andrus de Laguna; for new members of the Executive Committee, H. T. Costello and H. B. Smith.

Memorial Resolutions. The Eastern Division in the course of the year lost by death from its associate membership, E. B. Bentley, and from its active membership, George Herbert Mead and William Mack-

* This statement must not be interpreted to mean that the Board of Officers has made a final decision upon this date.—C. W. Morris.

intire Salter. The following resolutions were ordered to be spread upon the minutes of the Association and transmitted to the respective families concerned.

George Herbert Mead: This Division deeply regrets the death of George Herbert Mead. Too original, and developing too rapidly, to find time to express his thoughts adequately in publication, he at least was able to set forth portions of his ripened philosophy in the Carus lectures at Berkeley a year ago. His pupils find their own impressions of Professor Mead confirmed by the judgment of Professor Dewey, who says of him: "His mind was deeply original,—in my judgment the most original mind in philosophy in the America of the last generations." As a teacher, his forte was in the lecture; at the end of a course with him, an attentive pupil would find that his notes of the lectures contained a scholarly and comprehensive treatise on the topic discussed, with fresh and penetrating insights not to be found in the literature of the subject. Professor Mead's most substantial contributions to philosophy, social psychology and behaviorism are already exercising an influence through the publications of such pupils. Equally at home in the sciences, belles lettres and the fine arts, rich in an understanding of people and social relations gained through direct contacts and administrative activities, and finely skilled to interpret all illuminatingly, Professor Mead's culture reached a degree of perfection rare among philosophers of the present time. (By W. K. Wright.)

William Mackintire Salter. Mr. Salter was born at Burlington, Iowa, in 1853, and died at his summer home, Silver Lake, New Hampshire, last June. He was educated at Knox College, Yale, Harvard, and Göttingen. From 1883 to 1892 and from 1897 to 1907 he was Lecturer to the Chicago Ethical Society; between 1892 and 1897 he acted in a like capacity to the Philadelphia Society for Ethical Culture. His later years were devoted to study and writing. Among his published works were *Der Religion der Moral, Moralische Reden, Ethical Religion, First Steps in Philosophy, Anarchy or Government?, Nietzsche the Thinker,* and a brochure published just before his death, *The Political Philosophy of Professor Burgess.* He believed that the highest is the ethical nature of man, and this is present in all men. From this fundamental affirmation he never varied. Those who knew him learned ever more and more to appreciate this rare man, the crystalline purity of his being, his lofty mind, his profound humanity. . . . There was a certain effulgence of Salter's inmost self which touched and penetrated all who came near him. It is the impress of this personality on others that will be the most enduring effect of his life. (By Felix Adler.)

New Members. The following nominees were recommended by the Executive Committee and elected to membership. *Active Members:* John T. Baker, Claude G. Beardslee, A. E. Blumberg, Walter T. Brown, Eilhard von Domarus, Benjamin Ginzburg, Richard Hope, John Allan Irving, Rudolf Kagey, Otis H. Lee, George A. Morgan, Jr., John W. Nason, Sidney S. Robins, John J. Rolbiecki, Kurt E. Rosinger, C. T. Ruddick, William N. Schwarze, Newton P. Stallknecht, Wendell C. Stone, Ross Thalheimer, Desiré Veltman. *Associ-*

ate Members: Percy L. Urban, Arnold H. Kamiat, Gabriel R. Mason, David H. Wilson. The inclusion of Professor R. M. Blake of the Western Division in the membership of the Eastern Division was formally recommended.

The Division expressed by formal vote its appreciation of the painstaking arrangements made by the department at Yale University for the comfort and pleasure of its guests, and the hospitality extended the Association throughout the period of its stay.

F. S. C. NORTHROP, *Secretary-Treasurer*

PACIFIC DIVISION

President: H. C. BROWN
Vice-President: D. S. MACKAY
Secretary-Treasurer: H. G. TOWNSEND
Executive Committee: The foregoing officers, W. SAVERY *ex officio* for one year, W. R. DENNES (1932), R. T. FLEWELLING (1932), and HUGH MILLER (1933)

The eighth annual meeting was held at Stanford University, California, on December 28 and 29, 1931. The following program was presented:

Matter, Space and God.....J. E. BOODIN
The Metaphysics of Space and Time.....V. F. LENZEN
Meyerson's Critique of Pure Reason.....J. LOEWENBERG

Symposium on Recent Contributions to Epistemology

Analysis as Philosophical Method—The Realist's Dilemma
HUGH MILLER
The Displacement of the Datum—A Critique of Lovejoy's Epistemology.....D. S. MACKAY
Reason and Nature: A Critique of Cohen's Epistemology
E. A. BURTT

Chance and Cosmogony (Presidential Address)....WILLIAM SAVERY
Wildon Carr, Philosopher and Friend.....R. T. FLEWELLING
Ethics as Pure Postulate.....D. C. WILLIAMS
A Theory of Meaning.....F. ANDERSON
Spinozistic Comments.....B. A. G. FULLER
Logic and Psychologic.....H. J. SMITH
Nature, Mind and Congruence.....D. A. PIATT

The Business Meeting was called to order at 9:30 a.m., Tuesday, December 29th, by President Savery. The minutes of the 1930 meeting were approved as read. The following report of the Treasurer was presented and accepted.

Balance on hand, January 1, 1931		$ 76.48
Receipts		
Refund, A.P.A. on account Expenses General Session 1930	$ 57.04	
Refund, Western Division on account Expenses Joint Session 1930	18.67	
Membership dues	154.00	
Total Receipts		229.71
Total		$306.19
Expenditures		
Programs 1930 meeting	$ 25.00	
Programs 1931 meeting	8.50	
Other Expenses 1930 meeting	5.55	
To C. W. Morris, Treasurer	36.43	
(Divisional Dues to A.P.A. $15.25)		
(Divisional Dues to A.C.L.S. $2.72)		
(Printing Annual Report $18.46)		
New Record Books for Division	8.70	
Clerical Assistance, Mimeographing, etc.	31.60	
Postage, Stamped envelopes and stationery	8.68	
Telegrams	2.16	
Total Expenditures		$126.62
Balance on hand, December 23, 1931		$179.57

The following resolution, interpreting the membership provision of the Constitution of the Pacific Division, was adopted.

In carrying out the provisions of Section 2, Article II, of the Constitution, and in particular that clause reading "Election to active membership shall be limited to persons professionally engaged in the teaching or study of philosophy whose academic rank is above that of Assistant", the Executive Committee shall hold that only those persons fulfill this requirement who hold the specified rank in universities or colleges on the accredited lists of the Association of American Universities. Other applicants, including those holding academic positions in educational institutons not on such lists, shall be regarded as eligible to Associate membership only, unless the alternative condition for election to Active membership shall have been met, namely "the publication of contributions of substantial value to philosophy". The Executive Committee may by special vote recommend for election to active membership an applicant who holds the specified rank in a college or university which, though not yet on the accredited lists of the Association of American Universities, is yet, in the opinion of the Executive Committee, of the type included in such lists.

The resignations of Mr. K. J. Saunders and Mr. B. C. Ewer were reported and accepted.

The following resolutions in memory of a former President of the Division and of the third Carus Lecturer were ordered, by rising vote, to be spread upon the minutes of the Division.

Herbert Wildon Carr. This Association and the world of scholarship have been deeply bereaved in the death of Professor Herbert Wildon Carr.

His keen interest and evident delight in the frank and free exchange of philosophical discussion will be long remembered by all who have met with him at the gatherings of the Division. His wisdom, his breadth of experience, his learning, and above all his orginality of mind, made him in a very signal way an awakener of reflection and fresh thought in the minds of others. He was so given to the love of and pursuit of philosophy, that he seemed to us the embodiment of his own noble thought, the ideal philosopher. His term as President of the Association was characterized by a highminded desire to be the servant of all.

His going leaves a place among us which can never be filled by another—a place which we shall prefer to keep unfilled as a reminder of our indebtedness and gratitude to him.

We extend to Geraldine Carr, his immediate family, and his closer associates, our sincerest sympathy, and order these resolutions spread on our records and a copy sent to Mrs. Carr. (R. T. Flewelling.)

George Herbert Mead. The untimely death of Professor George Herbert Mead at Chicago, April 26, 1931, deprived American philosophy of one of its most careful scholars. In the Carus Lectures, Professor Mead had started to lay before us the results of his most mature thinking. The materials therein contained will constitute his greatest philosophical memorial.

To his friends and associates, Professor Mead was a man ever ready to devote his abilities and energies to the furthering of civic ideals and the cause of social welfare.

To his fellow-students he exhibited an astonishing power of losing himself in their problems, to stimulate and fructify their ideas rather than to impose his own.

To his colleagues in the social sciences he offered significant contributions towards clarifying the difficult problems of social psychology.

It is for us, the members of the Pacific Division of the American Philosophical Association, whose pleasure it has been to have Professor Mead with us both as Mills Lecturer at the University of California and as Carus Lecturer at the General Meeting of the Association only last year, to join with all American philosophers in offering our tribute to the distinguished colleague who is gone from our midst. (Harold Chapman Brown.)

On the recommendation of the Executive Committee the following persons were elected to active membership in the Division: C. H. Farman, Everett Nelson, Herbert Phillips, Melvin Rader, Stanley B. Reid, F. C. S. Schiller; the following to associate membership: R. F. Leavens, E. V. Tenney.

The Executive Committee presented the following nominations: for President, H. C. Brown; for Vice-President, D. S. Mackay; for Secretary-Treasurer, H. G. Townsend; for member of the Executive Committee, Hugh Miller.

The Acting-Secretary was directed by the members to cast a unanimous ballot for the foregoing, and they were declared elected.

The Division expressed by formal vote its grateful appreciation of the hospitality of Stanford University, and of the members of its Department of Philosophy, extended to the Division during its eighth annual meeting.

The Business Meeting then adjourned.

WILLIAM R. DENNES, *Acting Secretary-Treasurer*

LIST OF MEMBERS

Members should notify the secretary of their division promptly of any changes to be made in the list of names and addresses.

Adams, Professor George P., University of California, Berkeley, Calif.
Adler, Professor Felix, Columbia University, New York City.
Aikins, Professor H. Austin, Western Reserve University, Cleveland, Ohio.
Alexander, Professor H. B., Scripps College, Claremont, Calif.
Alles, Professor Adam, St. Johns College, Annapolis, Md.
Ames, Professor E. S., University of Chicago, Chicago, Ill.
Ames, Professor Van Meter, University of Cincinnati, Cincinnati, Ohio.
Anderson, Professor Frederick, Stanford University, Calif.
Anderson, Professor Fulton H., University of Toronto, Toronto, Canada.
Angier, Dr. R. P., Yale University, New Haven, Conn.
Apple, President Henry H., Franklin and Marshall College, Lancaster, Pa.
Armstrong, Professor A. C., Wesleyan University, Middletown, Conn.
Avey, Professor Albert E., Ohio State University, Columbus, Ohio.
Ayres, Dr. Edith, 75 Barrow St., New York City.
Baillie, Professor John, Union Theological Seminary, New York City.
Baker, Dr. John Tull, Sarah Lawrence College, Bronxville, N. Y.
Bakewell, Professor C. M., Yale University, New Haven, Conn.
Baldwin, Dr. J. M., c/o Harris, Forbes and Co., New York City.
Balz, Professor Albert, University of Virginia, Charlottesville, Va.
Barrett, Professor Clifford L., University of California, Los Angeles, Calif.

Baylis, Dr. Charles A., Brown University, Providence, R. I.
Beardslee, Professor Claude Gillette, Lehigh University, Bethlehem, Pa.
Becker, Professor Frank C., Lehigh University, Bethlehem, Pa.
Bellperch, Professor R. J., St. Xavier College, Cincinnati, Ohio.
Benham, A. R., University of Washington, Seattle, Washington.
Benjamin, Professor A. C., University of Illinois, Urbana, Ill.
Bennion, Professor Milton, University of Utah, Salt Lake City, Utah.
Bentley, Professor John, American University, Washington, D. C.
Bernstein, Professor B. A., University of California, Berkeley, Calif.
Bewkes, Mr. E. G., Colgate University, Hamilton, N. Y.
Birch, Professor J. Bruce, Wittenberg College, Springfield, Ohio.
Bixler, Professor Julius S., Smith College, Northampton, Mass.
Black, D. G. A., 156 Park Street, Gardner, Mass.
Blake, Professor R. M., Brown University, Providence, R. I.
Blanshard, Professor Brand, Swarthmore College, Swarthmore, Pa.
Blanshard, Mrs. Frances B., Swarthmore College, Swarthmore, Pa.
Blote, Dr. Hal C., Pacific Grove, Calif.
Blumberg, Dr. A. E., Johns Hopkins University, Baltimore, Md.
Boas, Professor George, Johns Hopkins University, Baltimore, Md.
Bode, Professor B. H., Ohio State University, Columbus, Ohio.
Bogoslovsky, Dr. Boris B., 407 Central Park West, New York City.
Boodin, Professor J. E., University of California, Los Angeles, Calif.
Boswell, Professor Foster P., Hobart College, Geneva, N. Y.
Boynton, Professor Richard W., University of Buffalo, Buffalo, N. Y.
Bradshaw, Professor M. J., Bangor Theological Seminary, Bangor, Maine.
Brandt, Professor Francis B., 4337 Larchwood Ave., Philadelphia, Pa.
Brett, Professor G. S., Toronto University, Toronto, Canada.
Brightman, Professor Edgar S., Box 35, Newton Center, Mass.
Brinton, Professor Howard, Mills College, Calif.
Britan, Professor Halbert H., Bates College, Lewiston, Maine.
Brogan, Professor A. P., University of Texas, Austin, Texas.
Brotherston, Professor Bruce W., Tufts College, Medford, Mass.
Brown, Professor Walter T., Yale University, New Haven, Conn.
Brown, Professor A. E., University of Washington, Seattle, Wash.
Brown, Professor George, Amherst College, Amherst, Mass.
Brown, Professor H. C., Stanford University, Calif.
Brown, Miss Sarah, Wells College, Aurora, N. Y.
Brown, Professor William Adams, Union Theological Seminary, New York City.
Bryan, President W. L., Indiana University, Bloomington, Ind.

Bryson, Mr. Lyman, 4291 Hermosa Way, San Diego, Calif.
Buchanan, Professor Scott M., University of Virginia, Charlottesville, Va.
Buckham, Professor John Wright, Pacific School of Religion, Berkeley, Calif.
Buermeyer, Dr. Lawrence, New York University, New York City.
Burnham, Mr. James, Washington Square College, New York University, New York City.
Burtt, Professor E. A., Cornell University, Ithaca, N. Y.
Bush, Professor Wendell T., Columbia University, New York City.
Bussey, Professor Gertrude C., Goucher College, Baltimore, Md.
Butler, President N. M., Columbia University, New York City.
Butt, Professor S. McClellan, Smith College, Northampton, Mass.
Caldwell, Professor M. A., University of Louisville, Louisville, Kentucky.
Calhoun, Dr. Robert L., Yale University, New Haven, Conn.
Campbell, Professor H. G., Morningside College, Sioux City, Iowa.
Campbell, Professor Ivy G., Wells College, Aurora, N. Y.
Carmichael, Professor R. D., University of Illinois, Urbana, Ill.
Case, Professor Mary S., Wellesley College, Wellesley, Mass.
Cattell, Dr. J. McKeen, Garrison-on-Hudson, N. Y.
Chambers, Professor Lawson P., Washington University, St. Louis, Mo.
Chandler, Professor Albert R., Ohio State University, Columbus, Ohio.
Chanter, Professor William G., Wesleyan University, Middletown, Conn.
Chao, Dr. Yuen Ren, Tsing Hua College, Peking, China.
Chatterji, Mr. J. C., International School of Vedic Research, Times Building, New York City.
Chidsey, Professor Harold, Lafayette College, Easton, Pa.
Christ, Dr. Paul S., Liberty High School, Bethlehem, Pa.
Clark, Professor Mary E., Smith College, Northampton, Mass.
Clarke, Dr. Francis P., University of Pennsylvania, Philadelphia, Pa.
Cohen, Mr. Felix S., 854 W. 181st street, New York City.
Cohen, Professor Joseph W., University of Colorado, Boulder, Colo.
Cohen, Professor Morris R., College of the City of New York, New York City.
Conger, Professor George, University of Minnesota, Minneapolis, Minn.
Coolidge, Professor Mary Lowell, Wellesley College, Wellesley, Mass.
Cory, Professor C. E., Washington University, St. Louis, Mo.

Cory, Professor H. E., University of Washington, Seattle, Wash.
Coss, Professor John J., Columbia University, New York City.
Costello, Professor H. T., Trinity College, Hartford, Conn.
Cowling, President D. J., Carleton College, Northfield, Minn.
Cox, Dr. George Clarke, 40 Wall St., New York City.
Crago, Professor A., Peru State College, Peru, Nebraska.
Craig, Dr. Wallace, P. O. Box 554, Brookline, Mass.
Crane, Professor Ester, Goucher College, Baltimore, Md.
Crawford, Professor J. F., Beloit College, Beloit, Wis.
Crawford, Professor Lucy S., Sweet Briar College, Sweet Briar, Va.
Cresswell, Professor John R., University of West Virginia, Morgantown, W. Va.
Crooks, Professor Ezra B., Delaware University, Newark, Del.
Crowley, Professor W. A., University of Cincinnati, Cincinnati, Ohio.
Cunningham, Professor G. Watts, Cornell University, Ithaca, N. Y.
Curtis, Professor M. M., Western Reserve University, Cleveland, Ohio.
Cutler, Professor Anna A., 60 Wall St., New Haven, Conn.
Daniels, Dean Arthur H., University of Illinois, Urbana, Illinois.
Davenport, Professor Charles K., University of Virginia, Charlottesville, Va.
Davies, Professor A. E., Colorado College, Colorado Springs, Colo.
Dearborn, Dr. G. V. N., U. S. Veterans' Hospital, Number 81, New York City.
DeBoer, Professor C., University of Arkansas, Fayetteville, Ark.
Deglman, Professor G. A., Rockhurst College, Kansas City, Mo.
DeLargy, Dr. P. L., University of Illinois, Urbana, Ill.
Demos, Dr. Raphael, Emerson Hall, Harvard University, Cambridge, Mass.
Denison, Professor Robert S., Pomona College, Claremont, Calif.
Dennes, Professor W. R., University of California, Berkeley, Calif.
Dent, Professor L. L. M., University of Virginia, Charlottesville, Va.
Dewey, Professor John, Columbia University, New York City.
Dickinson, Professor F. W., University of Denver, Denver, Colo.
Diehl, Professor Frank, Hanover College, Hanover, Indiana.
Dodd, Mrs. Edwin M., Jr., 999 Memorial Drive, Cambridge, Mass.
Dodge, Professor Raymond, Yale University, New Haven, Conn.
Dodson, Rev. G. R., Washington University, St. Louis, Mo.
Dolson, Dr. Grace N., St. Mary's Free Hospital for Children, 407 West 34th St., New York City.
von Domarus, Dr. Eilhard, Yale University, New Haven, Conn.
Dotterer, Professor Ray H., Pennsylvania State College, State College, Pa.

Doxsee, Professor Carl W., Pennsylvania College for Women, Pittsburgh, Pa.
Drake, Professor Durant, Vassar College, Poughkeepsie, N. Y.
Dubs, Professor Homer H., Marshall College, Huntington, W. Va.
Ducasse, Professor C. J., Brown University, Providence, R. I.
Dunham, Dr. James H., The Temple University, Philadelphia, Pa.
Duvall, Professor R. G., Ohio Wesleyan University, Delaware, Ohio.
Dykhuizen, Professor George, University of Vermont, Burlington, Vt.
Eames, Professor H. P., Scripps College, Claremont, Calif.
Eaton, Professor Howard O., University of Oklahoma, Norman, Okla.
Eaton, Professor R. M., Harvard University, Cambridge, Mass.
Eckardt, Professor L. R., Depauw University, Greencastle, Ind.
Elkus, Dr. Savilla A., 434 W. 120 Street, New York City.
Emery, Professor Stephen A., University of North Carolina, Chapel Hill, N. C.
Ericksen, Professor F. E., University of Utah, Salt Lake City, Utah.
Evans, Professor D. Luther, College of Wooster, Wooster, Ohio.
Everett, Professor Walter G., Brown University, Providence, R. I.
Farber, Professor Marvin, University of Buffalo, Buffalo, N. Y.
Faris, Professor Ellsworth, University of Chicago, Chicago, Ill.
Farley, Professor J. H., Lawrence College, Appleton, Wis.
Farman, Professor Carl H., University of Southern California, Los Angeles, Calif.
Ferm, Professor Vergilius, College of Wooster, Wooster, Ohio.
Fisch, Professor M. H., Western Reserve University, Cleveland, Ohio.
Fisher, Dr. D. Warren, New Canaan, Conn.
Fletcher, Professor O. O., 1028 St. John's Place, Brooklyn, N. Y.
Flewelling, Professor Ralph T., University of Southern California, Los Angeles, Calif.
Friess, Professor Horace L., Columbia University, New York City.
Frye, Dr. Albert M., Dartmouth College, Hanover, N. H.
Frye, Dr. Myrton, Oberlin College, Oberlin, Ohio.
Fuller, Professor B. A. G., Sherborn, Mass.
Gabbert, Professor M. P., University of Pittsburgh, Pittsburgh, Pa.
Gamble, Professor Eleanor A., Wellesley College, Wellesley, Mass.
Gammertsfelder, Professor W. S., Ohio University, Athens, Ohio.
Garnett, Professor A. C., Butler University, Indianapolis, Indiana.
Geiger, Professor G. R., University of North Dakota, Grand Forks, N. D.
Geiger, Professor Joseph R., William and Mary College, Williamsburg, Va.

Geyer, Professor Denton L., 5725 Kimbark Ave., Chicago, Ill.
Gifford, Professor A. R., University of Vermont, Burlington, Vt.
Gilbert, Dr. Katherine E., Duke University, Durham, N. C.
Gillet, Professor A. L., Hartford Theological Seminary, Hartford, Conn.
Ginzburg, Dr. Benjamin, 3908 Bliss Street, Long Island City, N. Y.
Given, Dr. P. L., 357 Lincoln Ave., Orange, N. J.
Givler, Professor Robert C., Tufts College, Mass.
Gotshalk, Professor D. W., University of Illinois, Urbana, Ill.
Gould, Professor Walter H., Norwich University, Northfield, Vt.
Greene, Professor Theodore M., Princeton University, Princeton, N. J.
Guthrie, Professor E. R., University of Washington, Seattle, Wash.
Guthrie, Rev. Kenneth S., 1177 Warburton Ave., North Yonkers, N. Y.
Hack, Professor R. K., University of Cincinnati, Cincinnati, Ohio.
Hammond, Professor W. A., Cosmos Club, Washington, D. C.
Harkness, Professor Georgia E., Elmira College, Elmira, N. Y.
Harris, Professor Marjorie S., Randolph-Macon Woman's College, Lynchburg, Va.
Hartman, Professor Henry G., University of Cincinnati, Cincinnati, Ohio.
Hartshorne, Professor Charles, University of Chicago, Chicago, Ill.
Hausheer, Hermann, College of Puget Sound, Tacoma, Washington.
Hawes, Professor R. P., Goucher College, Baltimore, Md.
Headley, Professor L. A., Carleton College, Northfield, Minn.
Heath, Professor Louise R., Hood College, Frederick, Md.
Handel, Professor Charles W., McGill University, Montreal, Canada.
Henderson, Professor Ernest N., Adelphi College, Garden City, N. Y.
Henke, Professor Frederick G., Allegheny College, Meadville, Pa.
Hibben, President J. G., Princeton University, Princeton, N. J.
Hildebrand, Professor Carroll DeWitt, DePauw University, Greencastle, Ind.
Hill, Dr. A. Ross, 717 Pioneer Trust Bldg., Kansas City, Mo.
Hinman, Professor E. L., University of Nebraska, Lincoln, Nebr.
Hitchcock, Dr. Clara M., 1923 East 71st Street, Cleveland, Ohio.
Hocking, Professor W. E., Harvard University, Cambridge, Mass.
Holcomb, Professor Louise, Wilson College, Chambersburg, Pa.
Hollands, Professor E. H., University of Kansas, Lawrence, Kansas.
Holmes, Professor Jesse H., Swarthmore College, Swarthmore, Pa.
Holtzclaw, Professor B. C., Richmond University, Richmond, Va.
Hook, Professor Sidney, New York University, New York City.
Hope, Professor Richard, University of Pittsburgh, Pittsburgh, Pa.

Horne, Professor H. H., New York University, New York City.
Horton, Professor W. M., Oberlin College, Oberlin, Ohio.
Hoskyn, Dr. Fred P., Yale University, New Haven, Conn.
Houf, Professor H. T., Ohio University, Athens, Ohio.
Howes, Dr. Ethel P., Smith College, Northampton, Mass.
Hudson, Professor J. W., University of Missouri, Columbia, Mo.
Hughes, Professor Percy, Lehigh University, Bethlehem, Pa.
Husik, Professor Isaac, University of Pennsylvania, Philadelphia, Pa.
Hutcheon, Professor R. J., 5659 Woodlawn Ave., Chicago, Ill.
Iredell, Professor Francis Raymond, Pomona College, Claremont, Calif.
Irving, Professor John Allan, Princeton University, Princeton, N. J.
Jackson, Professor Reginald, Trinity College, Oxford, England.
Jefferson, Mr. Howard B., Colgate University, Hamilton, New York.
Johnson, Professor George, Lincoln University, Pa.
Johnson, Professor Paul E., Hamline University, St. Paul, Minn.
Johnson, Professor R. B. C., Princeton University, Princeton, N. J.
Jones, Professor A. H., University of Rochester, Rochester, N. Y.
Jones, Professor A. L., Columbia University, New York City.
Jones, Professor Rufus M., Haverford College, Haverford, Pa.
Jordan, Professor E., Butler University, Indianapolis, Ind.
Jordan, Mr. Philip D., Long Island University 333 Pearl St., N. Y.
Joshi, Professor S. L., Dartmouth College, Hanover, N. H.
Kagey, Dr. Rudolf, New York University, Washington Square East, New York City.
Kallen, Professor Horace, 66 West 12th St., New York City.
Kamiat, Mr. Arnold H., 1136 Sterling Place, Brooklyn, N. Y.
Kantor, Professor J. Robert, Indiana University, Bloomington, Ind.
Kellogg, Professor Edwin H., Skidmore College, Saratoga Springs, N. Y.
Kelly, Professor Thomas R., Earlham College, Richmond, Ind.
Kemmerer, Mrs. Mabel C., State Laboratory, Old Capital, Jackson, Miss.
Kennedy, Professor Gail, Amherst College, Amherst, Mass.
Kerby-Miller, Professor S., University of Missouri, Columbia, Mo.
Keyser, Professor Cassius J., Columbia University, New York City.
Kirn, Dean G. J., North Central College, Naperville, Ill.
Knight, Edward C., Principia Junior College, 5539 Page Blvd., St. Louis, Mo.
Knudson, Professor Albert C., 72 Mt. Vernon Street, Boston, Mass.
Kretschmann, Mr. Philip M., Princeton University, Princeton, N. J.
Kroencke, Dean Fred W., Valparaiso University, Valparaiso, Indiana.

Krusé, Professor Cornelius F., Wesleyan University, Middletown, Conn.
Lafferty, Dr. T. T. Lehigh University, Bethlehem, Pa.
de Laguna, Professor Grace A., Bryn Mawr College, Bryn Mawr, Pa.
Lamprecht, Professor Sterling P., Amherst College, Amherst, Mass.
Landes, Professor Margaret W., Constantinople College for Women, Galata, P. O. Box 39, Istanbul, Turkey.
Lane, Professor W. B., University of Toronto, Toronto, Canada.
Langford, Mr. Cooper H., University of Michigan, Ann Arbor, Michigan.
Lanz, Professor H. C., Stanford University, Calif.
Larrabee, Professor Harold A., Union College, Schenectady, N. Y.
Leary, Professor D. B., University of Buffalo, Buffalo, N. Y.
Leavenworth, Dr. Isabel F., Barnard College, New York City.
Lee, Dr. Otis Hamilton, Harvard University, Cambridge, Mass.
Leidecker, Dr. Kurt F., International School of Vedic and Allied Research, 1500 Times Bldg., New York City.
Leighton, Professor J. A., Ohio State University, Columbus, Ohio.
Lenzen, Professor V. F., University of California, Berkeley, Calif.
Levinson, Professor Ronald B., University of Maine, Orono, Me.
Lewis, Professor Clarence I., Harvard University, Cambridge, Mass.
Lewis, Dr. Leicester C., Episcopal Academy, Overbrook, Pa.
Liddell, Professor A. Forbes, Florida State College for Women, Tallahassee, Fla.
Lindley, President E. H., University of Kansas, Lawrence, Kansas.
Lodge, Professor R. C., University of Manitoba, Winnipeg, Canada.
Loeb, Dr. Elizabeth N., 95 Prescott St., Cambridge, Mass.
Loewenberg, Professor J., University of California, Berkeley, Calif.
Long, Professor Wilbur H., University of Southern California, Los Angeles, Calif.
Lorimer, Dr. Frank, 2810 P St., N.W., Washington, D. C.
Lough, Professor J. E., 285 Madison Ave., New York City.
Lovejoy, Professor A. O., Johns Hopkins University, Baltimore, Md.
Lyman, Professor Eugene W., Union Theological Seminary, New York City.
MacCallum, Professor H. R., Queen's University, Kingston, Ontario.
MacDougall, Professor R. M., 228 Midland Ave., Montclair, N. J.
MacGiffert, President A. C., Union Theological Seminary, New York City.
Macintosh, Professor Douglas C., Yale University, New Haven, Conn.
Mackay, Professor D. S., University of California, Berkeley, Calif.

MacKaye, Dr. James, Dartmouth College, Hanover, N. H.
Mackenzie, President William D., Hartford, Conn.
MacKinnon, Professor Flora Isabel, Wellesley College, Wellesley, Mass.
MacLennan, Professor S. F., Oberlin College, Oberlin, Ohio.
MacMillan, Dr. D. F., Board of Education, Chicago, Ill.
McClure, Professor M. T., University of Illinois, Urbana, Ill.
McCormack, Mr. Thomas J., LaSalle, Ill.
McGill, Dr. V. J., Hunter College, New York City.
McGilvary, Professor E. B., University of Wisconsin, Madison, Wis.
McIntire, Professor Walter O., Wheaton College, Norton, Mass.
McKeon, Professor Richard, Columbia University, New York City.
Mahan, Professor W. B., University of Arkansas, Fayetteville, Ark.
Manry, Professor James C., University of Iowa, Iowa City, Iowa.
Marhenke, Dr. Paul, University of California, Berkeley, Calif.
Marlatt, Professor Earl B., 9 Willow Street, Boston, Mass.
Marti, Dr. Fritz, Goucher College, Baltimore, Md.
Martin, Mr. Everett D., People's Institute, New York City.
Martin, Professor Herbert, University of Iowa, Iowa City, Iowa.
Martin, Professor S. G., Northwestern University, Evanston, Ill.
Marsh, Professor H. D., College of the City of New York, New York City.
Marvin, Professor W. T., Rutgers University, New Brunswick, N. J.
Mason, Dr. Gabriel R., Abraham Lincoln High School, Brooklyn, N. Y.
Mason, Professor M. Phillips, Bowdoin College, Brunswick, Maine.
Meiklejohn, Professor Alexander, University of Wisconsin, Madison, Wis.
Melrose, Professor J. A., James Millikin University, Decatur, Ill.
Melvin, Professor Georgiana, Mills College, Calif.
Michel, Professor Virgil, St. John's University, Collegeville, Minn.
Miller, Professor Dickinson S., c/o Thomas Cook & Son, Stephansplatz, Vienna.
Miller, Professor Hugh, 405 Highland Ave., Los Angeles, Calif.
Miller, Dr. James W., Emerson Hall, Harvard University, Cambridge, Mass.
Miller, Professor John W., Williams College, Williamstown, Mass.
Mitchell, Professor Arthur, 18 Strong St., Jamestown, N. Y.
Mitchell, Professor E. T., University of Texas, Austin, Texas.
Montague, Professor W. P., Columbia University, New York City.
Moore, Director E. C., University of California, Los Angeles, Calif.
Moore, Professor Edward C., Harvard University, Cambridge, Mass.

Moore, Professor Jared S., Western Reserve University, Cleveland, Ohio.
More, Dean Louis T., University of Cincinnati, Cincinnati, Ohio.
Morgan, Jr., Dr. George Allen, Harvard University, Cambridge, Mass.
Morgan, Professor W. J., Washburn College, Topeka, Kansas.
Morgan, Professor W. S., Pacific Unitarian School for the Ministry, 2400 Allston Way, Berkeley, Calif.
Morris, Professor Charles W., University of Chicago, Chicago, Ill.
Morris, Professor Frank E., Connecticut College, New London, Conn.
Morrow, Professor Glenn R., University of Illinois, Urbana, Ill.
Mueller, Professor Gustav, University of Oklahoma, Norman, Okla.
Muir, Professor Ethel G., The Wilcox Place, Painesville, Ohio.
Munro, Professor Thomas, Rutgers University, New Brunswick, N. J.
Murphy, Professor Arthur E., Brown University, Providence, R. I.
Myers, Professor Orvil F., Los Angeles Junior College, Los Angeles, Calif.
Nagel, Dr. Ernest, College of the City of New York, New York City.
Nahm, Professor Milton C., Bryn Mawr College, Bryn Mawr, Pa.
Nason, Mr. John W., Swarthmore College, Swarthmore, Pa.
Nelson, Dr. Everett, University of Washington, Seattle, Wash.
Nelson, Professor Ralph W., Phillips University, Enid, Oklahoma.
Newlin, Professor W. J., Amherst College, Amherst, Mass.
Nicholson, J. A., University of Illinois, Urbana, Ill.
Nicol, Professor Carl C. W., Oberlin College, Oberlin, Ohio.
Nilson, Dr. Sven, 5707 Dorchester Ave., Chicago, Ill.
Norris, Professor O. O., Ypsilanti State Normal College, Ypsilanti, Mich.
Northrop, Professor F. S. C., 1891 Yale Station, New Haven, Conn.
Norton, Mr. William J., 54 Patton Ave., Princeton, N. J.
Otto, Professor M. C., University of Wisconsin, Madison, Wis.
Overstreet, Professor H. A., College of the City of New York, New York City.
Pace, Professor E. A., Catholic University of America, Washington, D. C.
Paine, Dr. E. T., Cornell University, Ithaca, N. Y.
Parker, Professor D. H., University of Michigan, Ann Arbor, Mich.
Parkhurst, Professor Helen, Barnard College, New York City.
Patrick, Professor G. T. W., University of Iowa, Iowa City, Iowa.
Patterson, Professor Charles H., University of Nebraska, Lincoln, Neb.
Patterson, Dean H. P., Oklahoma A. & M. College, Stillman, Oklahoma.

Payne, President Bruce R., Teacher's College, Nashville, Tenn.
Payne, Professor Wilfred, University of Wisconsin, Madison, Wis.
Pell, Professor Orlie A. H., Hollins College, Hollins, Va.
Penney, President M. E., James Millikin University, Decatur, Ill.
Pepper, Professor Stephen C., University of California, Berkeley, Calif.
Perry, Professor Charles M., University of Oklahoma, Norman, Okla.
Perry, Professor Charner M., University of Texas, Austin, Texas.
Perry, Professor Ralph B., Harvard University, Cambridge, Mass.
Peterson, Dr. Houston, Columbia University, New York City.
Pfeiffer, Professor Frederick L., University of Minnesota, Minneapolis, Minn.
Phillips, Dr. George Blanchard, Miami University, Oxford, Ohio.
Phillips, Herbert, University of Washington, Seattle, Wash.
Piatt, Professor Donald A., University of California at Los Angeles, Los Angeles, Calif.
Picard, Professor Maurice, Dartmouth College, Hanover, N. H.
Pillsbury, Professor W. B., University of Michigan, Ann Arbor, Mich.
Piper, Professor Raymond F., Syracuse University, Syracuse, N. Y.
Porteous, Professor A. J. D., McGill University, Montreal, Canada.
Pott, William S. A., General Motors Export Co., Broadway at 57th St., New York City.
Powell, Professor Elmer E., Miami University, Oxford, Ohio.
Prall, Professor D. W., Harvard University, Cambridge, Mass.
Pratt, Professor J. B., Williams College, Williamstown, Mass.
Procter, Professor Thomas Hayes, Wellesley College, Wellesley, Mass.
Pyle, Professor C. B., Kansas State Teachers College, Pittsburg, Kansas.
Rader, Dr. Melvin, University of Washington, Seattle, Wash.
Rand, Dr. Benjamin, Harvard University, Cambridge, Mass.
Randall, Professor J. H., Jr., Columbia University, New York City.
Ratner, Dr. Joseph, 500 West 174th St., New York City.
Raub, Professor William L., Knox College, Galesburg, Ill.
Rebec, Professor George, University of Oregon, Eugene, Oregon.
Reed, Professor J. Frank, Garrett Biblical Institute, Evanston, Ill.
Reid, Dr. Stanley B., 1908 Delaware St., Berkeley, Calif.
Regester, Professor John Dickinson, College of Puget Sound, Tacoma, Wash.
Reiser, Professor Oliver L., University of Pittsburgh, Pittsburgh, Pa.
Reynolds, Dr. Paul A., Wesleyan University, Middletown, Conn.
Rieber, Professor C. H., University of California, Los Angeles, Calif.

Riesen, Professor E. R., University of Arizona, Tucson, Arizona.
Riley, Professor Woodbridge, Vassar College, Poughkeepsie, N. Y.
Roback, Dr. A. A., Harvard University, Cambridge, Mass.
Robbins, Mr. Reginald C., Union Club, 8 Park Street, Boston, Mass.
Robins, Professor Sidney S., St. Lawrence University, Canton, N. Y.
Robinson, Professor D. S., University of Indiana, Bloomington, Ind.
Robinson, Professor Elmo A., State Teachers College, San Jose, Calif.
Robinson, Professor Richard, Cornell University, Ithaca, N. Y.
Roelofs, Professor Howard Dykema, Stanford University, Calif.
Rohrbaugh, Professor L. G., Dickinson College, Carlisle, Pa.
Rolbiecki, Professor John J., Catholic University, Washington, D. C.
Rosinger, Dr. Kurt Edward, 86 Perkins Hall, Harvard University, Cambridge, Mass.
Ruddick, Dr. C. T., University of Pennsylvania, Philadelphia, Pa.
Runkle, Professor Erwin W., Pennsylvania State College, Pa.
Ryan, Professor James H., Catholic University of America, Washington, D. C.
Sabine, Professor George H., Cornell University, Ithaca, N. Y.
Sabin-Smith, Professor Ethel, Mills College, Calif.
Sait, Professor Una Bernard, Scripps College, Claremont, Calif.
Sanborn, Professor Herbert C., Vanderbilt University, Nashville, Tenn.
Sanford, Miss Gertrude Virginia, 1371 Locust Street, Pasadena, Calif.
Savery, Professor William, University of Washington, Seattle, Wash.
Savides, Professor A. P., Russell Sage College, Troy, N. Y.
Saw, Ruth L., Smith College, Northampton, Mass.
Schaub, Professor E. L., Northwestern University, Evanston, Ill.
Schaupp, Professor Zora, University of Nebraska, Lincoln, Nebraska.
Schilpp, Professor P. A., College of the Pacific, Stockton, Calif.
Schmidt, Professor Karl, Carleton College, Northfield, Minn.
Schneider, Professor Herbert W., Columbia University, New York City.
Schwarze, President William Nathaniel, Moravian College for Men, Bethlehem, Pa.
Scoon, Professor Robert M., Princeton University, Princeton, N. J.
Scott, Professor Benjamin D., Pomona College, Claremont, Calif.
Scott, Professor W. H., 3451 High Street, Columbus, Ohio.
Searles, Professor H. L., University of Southern California, Los Angeles, Calif.
Sellars, Professor R. W., University of Michigan, Ann Arbor, Michigan.

Sellen, Professor Arthur G., Washburn College, Topeka, Kansas.
Shafer, Professor Robert, University of Cincinnati, Cincinnati, Ohio.
Sharp, Professor Frank C., University of Wisconsin, Madison, Wis.
Sharrard, Professor J. A., University of Saskatchewan, Saskatoon, Canada.
Shaw, Professor C. G., New York University, New York City.
Shaw, Professor J. B., University of Illinois, Urbana, Ill.
Sheffer, Professor H. M., Harvard University, Cambridge, Mass.
Sheldon, Professor W. H., Yale University, New Haven, Conn.
Sherman, Professor Charles L., Willamette University, Salem, Ore.
Shimer, Professor Wm. A., Ohio State University, Columbus, Ohio.
Shryock, Dr. J. K., University of Pennsylvania, Philadelphia, Pa.
Singer, Professor Edgar A., University of Pennsylvania, Philadelphia, Pa.
Sisson, Professor E. O., Reed College, Portland, Ore.
Slaght, Professor W. E., Cornell College, Mt. Vernon, Iowa.
Sloninsky, Dr. Henry, 393 West End Ave., New York City.
Smart, Professor Harold R., Cornell University, Ithaca, N. Y.
Smith, Professor Henry B., Box 23, College Hall, University of Pennsylvania, Philadelphia, Pa.
Smith, Professor T. V., University of Chicago, Chicago, Ill.
Sneath, Professor E. Hershey, 309 St. Ronan Street, New Haven, Conn.
Snow, Dr. Adolph J., 500 Sheridan Road, Evanston, Ill.
Spaulding, Professor E. G., Princeton University, Princeton, N. J.
Speight, Professor H. E. B., Dartmouth College, Hanover, N. H.
Spencer, Dr. Margaret N., 400 Whitney Ave., New Haven, Conn.
Spencer, Dr. W. Wylie, 400 Whitney Ave., New Haven, Conn.
Springer, Professor F. E., University of Idaho, Caldwell, Idaho.
Squires, Professor W. H., Hamilton College, Clinton, N. Y.
Stalknecht, Dr. Newton, P., Bowdoin College, Brunswick, Me.
Stanley, Dr. Philip, Union College, Schenectady, N. Y.
Starbuck, Professor E. D., University of Southern California, Los Angeles, Calif.
Stokes, Dr. Ella H., Penn College, Oskaloosa, Iowa.
Stone, Dr. Wendell, C., Yale University, New Haven, Conn.
Stoops, Professor J. D., Grinnell College, Grinnell, Iowa.
Storer, Mr. Morris V., Lafayette College, Easton, Pa.
Strong, Professor C. A., Fiesole, Florence, Italy. *Life Member.*
Stuart, Professor H. W., Stanford University, Calif.

Swabey, Professor Marie Collins, New York University, University Heights, New York City.

Swabey, Professor W. Curtis, New York University, University Heights, New York City.

Swenson, Professor David F., University of Minnesota, Minneapolis, Minn.

Swift, Professor R. F., Rockford College, Rockford, Ill.

Taeusch, Professor C. F., Harvard School of Business Administration, Cambridge, Mass.

Talbert, Professor Ernest L., University of Cincinnati, Cincinnati, Ohio.

Talbot, Professor Ellen B., Mt. Holyoke College, South Hadley, Mass.

Tapper, Professor Bonno, University of Iowa, Iowa City, Iowa.

Tawney, Professor Guy A., University of Cincinnati, Cincinnati, Ohio.

Taylor, Professor W. S., Pierce Hall, Northampton, Mass.

Ten Hoor, Professor Martin, Tulane University, New Orleans, La.

Terrell, Professor Glanville, Louisa, Va.

Thalheimer, Dr. Ross, Johns Hopkins University, Baltimore, Md.

Thilly, Professor Frank, Cornell University, Ithaca, N. Y.

Thomas, Professor George F., Dartmouth College, Hanover, N. H.

Thomas, Mr. Wendell M., College of the City of New York, New York City.

Thompson, Professor C. G., Lincoln Memorial Univ., Harrogate, Tenn.

Thompson, Professor R. C., University of Nevada, Reno, Nevada.

Thomson, Professor M. K., 729 W. Michigan Ave., Ypsilanti, Mich.

Thorndike, Professor E. L., Columbia University, New York City.

Titus, Professor Harold H., Denison University, Granville, Ohio.

Toll, Professor C. H., Amherst College, Amherst, Mass.

Tower, Professor C. V., Ursinus College, Collegeville, Pa.

Townsend, Professor Harvey G., University of Oregon, Eugene, Oregon.

Tsanoff, Professor R. A., The Rice Institute, Houston, Texas.

Tufts, Professor James H., 87 Romero Canyon Road, Santa Barbara, Calif.

Turner, Professor John P., Brooklyn College, Brooklyn, N. Y.

Tuttle, Professor John R., Elmira College, Elmira, N. Y.

Urban, Professor Percy Linwood, Berkeley Divinity School, New Haven, Conn.

Urban, Professor Wilbur M., Yale University, New Haven, Conn.

Van Becelaere, Rev. E. L., 1428 Warren West, Detroit, Mich.
Van de Walle, Professor William E., University of Rochester, Rochester, N. Y.
Van Riper, Dr. Benjamin, 110 Sheridan Street, Rockford, Ill.
Veltman, Dr. Désiré, Princeton University, Princeton, N. J.
Vibbert, Professor Charles B., University of Michigan, Ann Arbor, Mich.
Walcott, Professor G. D., Long Island University, Brooklyn, N. Y.
Warbeke, Professor John M., Mt. Holyoke College, South Hadley, Mass.
Ward, Professor Paul W., Syracuse University, Syracuse, N. Y.
Warren, Dean William M., Boston University, Boston, Mass.
Warren, Professor W. P., Furman University, Greenville, S. C.
Watson, Professor A. C., Marietta College, Marietta, Ohio.
Weiss, Dr. Paul, Bryn Mawr College, Bryn Mawr, Pa.
Wells, Professor Wesley R., Syracuse University, Syracuse, N. Y.
Werkmeister, Professor Wm. H., University of Nebraska, Lincoln. Neb.
Weyer, Dean Edward M., Washington and Jefferson College, Washington, Pa.
Wheelright, Professor Philip E., Washington Square College, New York University, New York City.
Whitehead, Professor Alfred N., Harvard University, Cambridge, Mass.
Whitney, Professor G. W. T., Princeton University, Princeton, N. J.
Widgery, Professor Alban G., Duke University, Durham, N. C.
Wieman, Professor H. N., University of Chicago, Chicago, Ill.
Wild, Professor John, Harvard University, Cambridge, Mass.
Wilde, Professor N., University of Minnesota, Minneapolis, Minn.
Williams, Dr. Donald C., Harvard University, Cambridge, Mass.
Williams, D. C., University of California, Los Angeles, Calif.
Williams, Professor S. P., Lake Forest University, Lake Forest, Ill.
Williamson, Professor Mary, Hollins College, Hollins, Va.
Wilm, Professor E. C., Stanford University, Calif.
Wilson, Dr. David Hawxhurst, Harvard University, Cambridge, Mass.
Wilson, Professor G. A., Syracuse University, Syracuse, N. Y.
Wilson, Dr. Mabel Virginia, 103 Hanshaw Rd., Ithaca, N. Y.
Winn, R. B., 5202 Woodlawn Ave., Chicago, Ill.
Wolfson, Professor Harry A., Harvard University, Cambridge, Mass.
Woodbridge, Professor F. J. E., Columbia University, New York City.
Woods, Professor James H., Harvard University, Cambridge, Mass.

Wright, Professor H. W., University of Manitoba, Winnipeg, Canada.
Wright, Professor William K., Dartmouth College, Hanover, N. H.
Yeaton, Mrs. E. M. K., Oberlin College, Oberlin, Ohio.
Zybura, The Rev. John S., St. Francis Hospital, Colorado Springs, Colo.

Associate Members

Adlerblum, Mrs. Nima H., 99 Central Park West, New York City.
Athearn, Clarence, 2106 N St., N.W., Washington, D.C.
Bradley, J. Harold, Boston Ethical Society, Boston, Mass.
Dunn, Mrs. Gano, Washington Square North, New York City.
Gogate, Mr. R. V., New Jersey Law School, Newark, N. J.
Leavens, Dr. R. F., Williams Junior College, Berkeley, Calif.
MacKnight, Lydia E., 439 W. 123d St., New York City.
Maxwell, Dr. William, State Teachers College, Santa Barbara, Calif.
McConnell, Bishop Francis J., 150 Fifth Ave., New York City.
Tenney, Dr. E. V., Fresno State College, Fresno, Calif.
Woods, Mr. Anderson, 1454 East 18th Street, Brooklyn, N. Y.

Honorary Member

Carus, Mrs. Mary Hegeler, La Salle, Ill.

THE LIBRARY OF THE
JUL 20 1939
UNIVERSITY OF ILLINOIS